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ORIGINAL COMMUNICATIONS.

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RHINOPHYMA.*

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The condition known as rhinophyma is somewhat unusual; it is an occasional sequel of acne rosacea. The nose becomes swollen and bulbous, and is covered with soft lobulated, nodular areas that are separated by deep fissures. In some instances the organ is so large as to obstruct vision. Keen reported a case of a patient who could not take fluid with a spoon without first holding his nose out of the way. Wende and Bentz also report a case of large rhinophyma.

Decortication of the nose is the accepted treatment for this condition, but from the fact that such procedure is delayed, and that extended medical treatment is employed, it would seem that the excellent results obtained by operation are not generally known. Warren and White, Keen, Fowler, Wood, Heinick and Sequeira have reported cases in this country in the last fifteen years in which the excellent cosmetic results following decortication are shown. The history of the case observed in the Mayo Clinic is as follows:

Case 254933, C. A. H., a man aged 60 (hotel proprietor), a moderate user of alcohol, coffee, and tobacco, came for examination January 3, 1919. The patient gave a previous history of lues, gonorrhea, and grippe. He complained chiefly of the condition of his nose, which was very large, of pain in the right side of the abdomen,

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and of gastric distress. The large tumor of the nose was very troublesome, particularly in reading, as well as being a source of embarrassment. An irritation of the nose, face, and chest, which was gradually becoming worse, had existed for twenty years. The enlargement of the nose had been more marked the last two or three years, and had been treated extensively without improvement. The pain in the right abdomen dated back four or five years, but the indefinite gastric distress had lasted for fifteen years.

Figure 1 shows the large rhinophyma. The acne rosacea extended over the cheeks, chest, and back. The Wassermann was negative.

Fig. 1 (254933). Rhinophyma before operation.

The abdominal distress was attributed to duodenal ulcer. Jan. 10, 1919, under ether anesthesia, a large mass of the hypertrophied tissue was cut away with a knife from the dorsum of the nose. The skin covering the lateral portion of the nose was undermined and a mass of tissue was removed from either side. The slight amount of bleeding was readily controlled by hot saline compresses. The margins of the wound were sutured in the midline. Feb. 3, 1919, the surplus tissue was shaved off with a knife down to the framework of the nose. By passing the index finger of the left hand alternately into either nostril the thickness of the hypertrophied tissue could

be felt and the rhinophyma was trimmed down in much the same manner that a piece of wood is whittled. Hot salt compresses readily controlled the bleeding and after the first two or three days the wound was left open as much as possible. A dressing of paraffin mesh was placed so as to form a bridge over the nose; it was attached to either cheek with adhesive plaster. No skin graft was employed. Two weeks after the operation the entire nose was completely covered with epithelium (Fig. 2). Small islands of epithelium, spreading out from the epithelium of the glands over the nose, gradually covered the raw area.

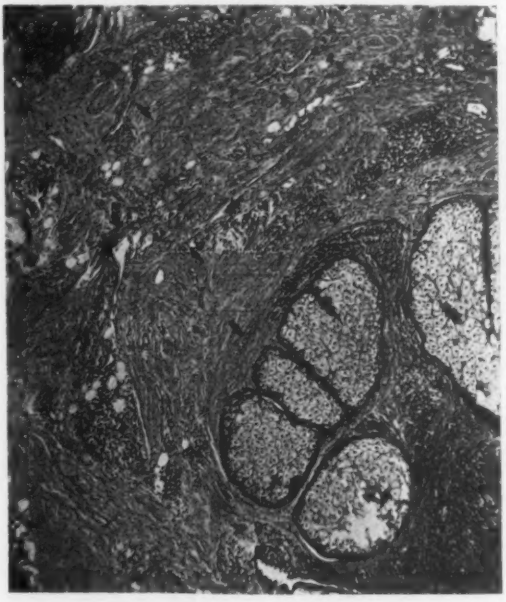

Fig. 2 (254933). Same as Figure 1 two weeks after operation.

Rhinophyma occurs nearly always in males and in most of the cases reported the patient was more than 50 years of age. The condition is classified as belonging in the third stage of acne rosacea, which frequently involves the cheeks. Alcoholism, dietetic disorders, and exposure to inclement weather are supposed to be etiologic factors of the condition, but this is difficult to prove. The histories of the cases reported in the literature do not bring out any definite etiologic factor.

Microscopically the connective tissue shows hyperplasia, hypertrophy and increase in the number of sebaceous glands, and enlargement and lengthening of the ducts. The blood vessels are dilated and increased in number. There is marked round cell infiltration in the connective tissue (Fig. 3).

Wende and Bentz have given a very complete pathologic analysis of rhinophyma. Coplin, who examined Keen's case pathologically, called it a soft fibroma with distention of the acne and possibly a hyperplasia of the sebaceous glands.

The treatment consists in paring off the hypertrophied tissue, care being used not to penetrate into the nasal cavity. The paring may be

Fig. 3 (254933). Photomicrograph of rhinophyma. Note the marked fibrosis, the hyperplasia of sebaceous glands and round cell infiltration.

done with a knife or a pair of scissors. The operative treatment of rhinophyma is very simple, and should be followed in these cases. Radium has been used, but the results have not been as satisfactory as those obtained by operation. Wood believes that skin grafting is essential for the best cosmetic results. White, Keen, and Heinick allowed the wounds to epitheliolize without grafting. It would seem that if the hypertrophied tissue is removed, leaving a smooth surface, that islands of epithelium will appear from the epithelium of

the glands of the nose and quickly cover over the raw area, giving a good cosmetic result.

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REPORT OF TWO CASES OF ABDUCENS PARALYSIS OCCURRING IN ACUTE SUPPURATIVE OTITIS MEDIA WITH MASTOIDITIS.

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Case 1. Gertrude C. Age, 6 years. Family history good. Previous personal history unimportant.

History of present illness as given by the child's mother: On February 13 developed an acute rhinitis. About one week later had severe pain in left ear, and a high fever. In a few days the ear began to discharge.

On March 26, the child was brought to my office. She complained of pain in her left frontal region, and her mother said that this was more severe when the ear did not discharge freely. Her tongue was heavily coated, breath offensive and she looked ill.

Status praesens: The left external auditory canal was filled with greenish foul-smelling pus. In the membrana tympani was a small antero-inferior perforation. There was no sagging of the posterior superior wall of the canal. The left mastoid was slightly tender to pressure, but was not visibly swollen, nor did it give a sensation of thickening on palpation.

Calomel, to be followed by a saline, was prescribed, and the mother was directed how to care for the ear.

On March 29 the child was again brought to my office. The aural condition was much the same, although the mother reported that

the quantity of discharge had diminished, and that the odor was less. The child had been closing one eye off and on during yesterday and today. When her mother asked her why she did this, she replied that with her two eyes open she saw two objects where there should have been only one, and that by closing one eye she only saw one of the objects at which she was looking. In the dark room, with the candle flame and a piece of red glass held before one eye, I satisfied myself that she had a horizontal homonymous diplopia, caused by a well-defined paresis of her left external rectus muscle.

Fearing intracranial involvement, an immediate opening of the left mastoid was advised. Other indications for operation were pain in the left side of the head (worse when the discharge was not free); a temperature of 100° F., as noted on her two previous visits; her septic appearance, and slight mastoid tenderness to pressure.

On March 30 a simple mastoid operation was performed. The cells were broken down, and the resulting cavity was filled with pus and granulations. There was no carious destruction of the tegmen mastoideum. A small area of the dura was exposed in this region, and found to be normal. The child began to improve on the following day. The ear discharge, which was green and had an offensive odor, ceased in one week. From the color and odor of the discharge, I regarded the infecting organism as the bacillus pyocyaneus, but regret that no microscopic examination was made. The double vision became less each day, and had entirely disappeared in two weeks.

April 24. Wound entirely healed, and child in good health.

Case 2. Mrs. E. W. Age, 34 years. Family history unimportant.

Previous illnesses have no bearing on present condition, with the exception of an atrophic rhinitis, which she has had since childhood.

Present illness began with influenza on October 1. On October 5 her left ear became very painful. Spontaneous rupture of the membrana tympani occurred in 12 hours. This was followed by a serous discharge, which soon became purulent.

I first saw the patient on October 21. She complained of pain in her ear, and in the corresponding side of face and teeth. She had anorexia and prostration.

Status praesens: The canal was filled with a purulent discharge. There was a small perforation at the apex of a teat-shaped elevation in the posterior superior quadrant of the membrana tympani. There was slight tenderness to pressure over the posterior part of the mastoid.

On October 23, the ear and general condition being unsatisfactory, a free incision of the membrana tympani was made, hoping that better drainage would be followed by improvement.

During the next few days her condition remained the same. Her temperature varied between 98° and 100,° and she was toxic.

A blood count at this time was as follows:

Hemoglobin	88%
Color Index	0.9+
Leucocytes	16,000
Polymorphonuclear Cells	78%
Red Blood Cells	4,500,000

A report of the bacteriologic examination of the ear discharge showed the staphylococcus albus.

On October 28, she complained of double vision; the diplopia increased as she looked to the left, and she was unable to abduct her left eye.

Suspecting possible intracranial involvement, and taking into consideration the amount and character of the aural discharge, together with her unfavorable general condition, an opening of the mastoid was advised.

The operation, performed on the same day, showed a mastoid principally of the diploeic type, with a somewhat thickened cortex. The small cells contained only serum and granulations. However, there was one cavity, about the size of a chestnut, in the posterior part of the mastoid. This was filled with pus, having the same macroscopic appearance as the aural discharge.

The tegmen of the mastoid, and the bony covering of the lateral sinus, were carefully examined for necrotic areas, but none being found, and the bone appearing healthy, no exposure was made of the dura or lateral sinus.

I was in hopes, as in Case 1, that all the symptoms would be cleared up by the mastoid operation. However, following the operation there was no improvement in the ocular condition, and the profuse aural discharge continued undiminished for the next two weeks.

Her temperature during the first week following the operation varied from 98° to 100°. During the next week it was slightly lower. At times she complained of pain in the corresponding side of the head and face; she had no appetite; had a heavily coated tongue and offensive breath, and felt very weak.

An examination of her tympanic membrane at this time showed that the mucous lining of the tympanum was pouting out through

the perforation, so that it had the appearance of a polypus. If the case had made the customary normal progress following a mastoid operation, the picture should have been an altogether different one to that presented by this patient. Therefore, a second operation was advised. Before beginning this, the bulging membrana tympani was freely incised, so that the line of incision included the old perforation and the bulging portion of the membrane.

Then the original mastoid incision was reopened. The newly-formed granulations were curetted away. The tegmen of the mastoid was then removed as far forward as possible. The dura over the tegmen mastoideum was congested; that portion of the dura above the roof of the middle ear was very adherent, and after elevating it from the bone there was a plastic exudate to be seen in this region. The bone covering the descending limb of the lateral sinus was next removed. As the sinus wall appeared normal, no further exploring was done in this direction.

A narrow iodoform gauze drain was introduced between the dura and the bone, along the antero-superior surface of the petrous portion of the temporal bone nearly to its apex; the lateral sinus was protected by a separate piece of iodoform gauze, and a third piece of gauze was introduced into the aditus ad antrum, and the remainder of the bony mastoid cavity.

Following the operation the patient began to improve. In three days the quantity of the ear discharge was much less, and in five days it had ceased altogether. Her general condition rapidly became better; her toxic symptoms disappeared, and her temperature became normal. The mastoid wound was clean.

By November 24, that is, 10 days after the secondary operation, there was decided improvement in the abduction of her eye, so that I have no doubt that the function of the abducens nerve will soon be completely restored.

In Case 1, the paralysis of the left external rectus muscle I regarded as probably being due to toxic neuritis, as the dura over the tegmen of the mastoid appeared normal.

In Case 2, I believe the abducens nerve involvement was due to localized basilar pachymeningitis, as the dura in the region of the roof of the mastoid and middle ear was thickened, reddened and adherent, and showed an exudate in the region of the tegmen tympani. The abducens nerve, as it traverses the apex of the petrous portion of the bone was probably involved in the inflammatory process.

As to the treatment of abducens paralysis in suppurative ear conditions with mastoiditis, a few words may be said. This may be arbitrarily divided into surgical, medical and mechanical.

Under the surgical division, the mastoid operation is indicated. This should be either the simple or radical, depending on the case. I believe a careful exposure of the dura at the same time is advisable, and will often save the patient from a secondary operation, as was necessary in Case 2. A very free incision of the membrana tympani may also be beneficial.

As to the medical treatment, K. I. seems to be the usual standby. Fluid extract of jaborandi, gtts X to XX, at 9:00 a. m., 3:00 p. m., and 9:00 p. m., may also be used to promote the absorption of effused serum, and to aid the iodides in the work of hastening absorption of plastic effusion. Or, pilocarpine hydrochlorate, ⅛ to ½ grain hypodermically, daily or every other day, may be used for the same purpose.

After the diplopia has disappeared, strych. sulph. gr. 1-100 to 1-40, before meals, has a tonic effect on the nerve and weakened external rectus muscle. The interrupted current of electricity, used once daily for ten minutes, may also do good.

Under the mechanical subdivision in the treatment, first, should be mentioned a patch to cover the affected eye, thereby doing away with the troublesome diplopia with its attending symptoms, such as headache, dizziness and nausea.

If the function of the paretic external rectus muscle does not return by the end of one year, the advancement or shortening of the muscle will lessen the field of the diplopia, thereby making the patient more comfortable, and give him a more natural pose of the head.

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BLOOD EXAMINATIONS IN THE SURGERY OF THE NOSE AND THROAT.

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The more than occasional reference in the literature of cases of severe or even fatal hemorrhage following operations upon the nose and throat and particularly operations for the removal of the lymphoid tissue of the nasopharynx and faucial tonsils and the undoubted existence of a goodly number of fatalities which are unpublished and hidden away in the memories of the operator, leads to much thought as to why these procedures should be fraught with so many more complications of this nature than in other general surgical interventions. Is it due to a lack of pre-operative understanding of the individual, or to unusual abnormalities found with greater frequency in these regions?

Harmon Smith reports in an article many years ago, a series of over fifty cases compiled from the literature, of alarming hemorrhage after tonsilotomy. I must, however, take exception to his statement as to the careful attention drawn to this subject in the textbooks. I have been unable to find anything more than the crudest casual reference in the works I have consulted.

May I be so bold as to say that it is a lamentable fact that of all those in the medical profession who would dare do any kind of a surgical operation, probably more have had the temerity to attempt operations on the nose and throat with less knowledge of their anatomy, than upon any other part of the human body.

I find constant explanation being mentioned in published cases of abnormal position of blood vessels and other lame excuses, for upon a critical analysis of the case, in most instances, the resultant complication has been due to a lack of sufficient preliminary investigation of the patient to be operated or, in some cases, a very decided error in technique. The haphazard calling of a case a bleeder, as an explanation without warrantable facts, is as poor a diagnostic excuse as hysteria, they both cover a multitude of sins and have eased the conscience of a multitude of occasional surgeons and shielded the inability or futile efforts of the more experienced.

There is an old adage, "He who lives in a glass house must pull down the blinds," and I myself must plead guilty in my earlier

experiences to the very things which I am making this plea to correct. I have but to cite the following instance:

An opera singer under my care had a lymphoid mass at the base of the tongue, which interfered with her high note vocalization. Her history was that five years previous, a very celebrated laryngologist had removed her tonsils, and for a period of nearly a week following, there was a constant succession of secondary hemorrhages, which finally ceased after a ligation of the carotid artery. This history I accepted with due consideration, but there had been nothing in my observation of this patient which led me to any conclusion but that the bleeding had been due to anything other than poor surgical technique. I accordingly guillotined a mass from the base of her tongue. Four hours later a secondary hemorrhage took place and I spent the remaining thirty hours in attendance upon her. Can you imagine a more difficult place to control a hemorrhage in the nature of a steady ooze? Had I the knowledge of the value of blood examinations at that time, I would have determined in advance of the operation that which I subsequently ascertained, that this patient was a true haemophiliac.

It is not the purpose of this paper to take up the question of the type of operative procedure, but I must make reference to the universal diversity of the plan of attack. Each operator seems to have a particular pet method. For example: in recently observing six different men in the course of one afternoon operate at one of our prominent clinics, each operated by a different method, and while I grant that every road may lead to Rome, yet some have pitfalls and are headed straight for the cemetery.

Upon close inquiry, I found that of the large number of these cases, some twenty-six which I saw operated at that particular clinic, they had either entered the hospital the previous night, or the day of the operation and that only a local examination of these children's noses and throats had been made. I am satisfied that some of these cases had had a very recent acute infection of the upper respiratory tract and probably were still running temperature or having considerable bronchial cough or a nasal secretion suggestive of an ethmoidal infection.

In one, the character of the nasal discharge with the excoriated condition of the muco-cutaneous juncture of the nose would, to my mind, have suggested a possible nasal diphtheria. In not a single instance was a blood examination made to determine whether or no a haemophiliae or purpuric tendency was present. Three of these

manifested a sufficiently troublesome amount of bleeding to have suggested very strongly to my mind that such a dyscrasia was underlying, although in one case I could not help but reflect that the use of the bistoury was rather an antiquated method of operation and one attendant with the possibilities of inviting disaster.

The invariable practice of controlling the bleeding was by compression. Only one operator of this group resorted to the use of the haemostatic forceps. Many of these cases left the operating table oozing and, I am satisfied, subsequently vomited up large quantities of swallowed blood. Observations of this kind raise the thought as to why should throat surgeons perform surgical procedures differently than the general surgeons? Would the abdominal surgeon rely upon compresion and close the wound without securely ligating every bleeding surface? If not, why should throat surgery be performed along such indifferent and careless lines?

It is not, however, the object of these remarks to dwell upon this phase of the subject, but rather to take up some consideration of the subject of the blood under normal and hemorrhagic conditions and to make reference to the great importance and preoperative value of blood examinations preliminary to operative work upon these parts, for to be forewarned is to be forearmed, and the safeguarding of the patient is the safeguarding of our own reputation.

Under normal conditions, when blood escapes from the blood vessels either into the tissues or outside of the body, coagulation takes place in from three to ten minutes. If the blood were to be removed from one of the blood vessels without first coming into contact with the tissues it would require a longer time to become jellied throughout. The same blood that coagulates in between three and ten minutes, when removed directly from the blood vessels may require thirty to forty minutes for coagulation. Almost all of the methods suggested for the determination of coagulation time fail to recognize what physiologists demonstrated long ago, that contact with the tissues markedly accelerates the coagulation time of the blood.

After the coagulated blood has stood for a short time the fibrin in the clot contracts, holding in it the enmeshed blood cells, and a straw colored fluid is expressed, which is known as serum.

Numerous theories have been advanced concerning the reason for the coagulation of blood and the one of Howell is probably most generally accepted, because each step is supported by experimental evidence. We may briefly summarize as follows: the final product, fibrin, does not exist as such in the blood, but is formed from its

precursor, fibrinogen, by the action of thrombin upon it. Thrombin is a protein substance. It does not exist in the circulating blood, but is formed by the inter-reaction of prothrombin and calcium salts. The activation of prothrombin does not occur normally while the blood is still in the blood vessels; it occurs only after the bleeding has taken place, for the reason that in the blood there is a substance which prevents the formation of thrombin and has been called anti-thrombin. The blood platelets and blood cells, when they undergo disintegration, and the lacerated tissues produce a substance which neutralizes anti-thrombin and allows thrombin to be formed by the combination of calcium salts and prothrombin. "Thromboplastic substances" is the term given to those materials which nullify the action of anti-thrombin. Howell has isolated a phosphatid which he calls "kephalin," which substance has the power to counteract the action of anti-thrombin.

Many methods have been devised for the estimation of coagulation time. Some have involved the removing of blood from a vein; others with the obtaining of blood by puncturing the skin. The removal of blood directly from the vein necessarily must exclude the action of thromboplastic substances derived from lacerated tissues and the blood will not coagulate as quickly as the blood removed by puncturing the skin.

Of course, this method does not give us a fair index of the coagulability of the blood, comparable with that which obtains after an operation. After a surgical procedure, the blood exudes over cut or lacterated tissues and gains the action of the thromboplastic substances from the cut or lacerated tissues in addition to the substances produced by the disintegration of the blood platelets and blood cells. We have adopted a method which is most serviceable in relation to nose and throat surgery. The skin is punctured with a needle having a knife edge and the blood is sucked into a 0.2c.c. pipette, such as is used in serological work. The blood is then allowed to flow to about the center of the pipette and it is then placed in the thermostat at 37° C., and observed every two minutes. From time to time a small drop of blood is blown on to a glass slide to determine whether coagulation has started. When coagulation is complete, it is very difficult to blow the blood from the pipette. Very often the blood, after having coagulated, does not contract and does not attach itself to the sides of the pipette and flows readily upon holding the pipette in an upright position. For this reason, it is always necessary to blow a drop on to a glass slide to determine

the presence of a clot. By allowing the blood to flow to about the center of the pipette, we avoid as much as possible any action on the blood which may occur as the result of drying while in the thermostat. With this method the coagulation time was estimated in over 400 cases, the average time being 6.3 minutes; the most prolonged coagulation time was 29 minutes, and the shortest was 1½ minutes.

In connection with this work, it is always necessary to determine the bleeding time for the reasons that will be mentioned later. The bleeding time is determined by noting the time when the skin is pierced and observing how long it will bleed by gently squeezing the part from time to time. The bleeding time was determined in nearly 200 of the cases above cited; the average time was 5 minutes, the longest bleeding time 29 minutes, and the shortest, 2 minutes. The coagulation time may be prolonged and the bleeding time may be short, or vice versa, or both may be prolonged.

Two conditions namely haemophilia and purpura, demand especial attention in connection with this work, for if they are not recognized before an operation is performed, they may give rise to complicating conditions which may even jeopardize the patient's life.

In no case where either the bleeding time or coagulation time varied much beyond the limits of normality, was operation undertaken without preliminary preparation to improve the altered blood condition. If this was not successfully accomplished, as occurred in a few instances, a refusal to operate was emphatically made. I have often wondered what occurred in one particular case where I had refused to operate, that had subsequently been operated by another physician, for in questioning him on the subject he has been singularly reticent. I do know, however, of some very uncharitable remarks made of him and which have reached my ears from lay sources.

Haemophilia is an hereditary disease transmitted through the female to the male offspring. It is characterized by greatly increased coagulation time, and as the result of an individual receiving a slight wound, it may prove the cause of his death. The true etiology of haemophilia is not yet known. It was presumed at one time that the delayed coagulation time was due to an increased amount of anti-thrombin, but subsequent investigation has proven the falsity of this supposition. It was then thought that there was in the blood of these patients a smaller quantity of calcium salts than normally exists. A series of several cases having a delayed coagulation time

were prepared successfully for operation by the administration over a period of time of large doses of calcium lactate. In some of these cases the hereditary influence could be demonstrated. From time to time, cases of haemophilia calcipriva are found, but the great majority of them have apparently a normal amount of calcium salts. Thus far we have been unable to unravel the mystery.

Purpura is a condition in which the bleeding time is prolonged, and the coagulation time is normal, although the clot does not contract. There is a diminution in the number of blood platelets, and the erythrocytes are easily lacked by hypotonic salt solutions. Hess has recently shown that this diminution in blood platelets is only apparent, but not real. There is a diminution in the visible blood platelets and the remaining number are in solution in the plasma. This observer believes that purpura haemorrhagica is caused by some toxin which dissolves blood platelets and injures the blood vessel walls. The poison in some haemolytic diseases is thought to be associated with a disease of the spleen, as the number of blood platelets increases after the spleen has been removed, and it is suggested that splenectomy should be taken into consideration in the course of the treatment of such a disease.

Lee and Robertson have been able to produce experimental purpura in guinea pigs by injecting the serum of a rabbit that had been given immunizing doses of guinea pigs' blood platelets. They found the identical conditions the same as observed in a patient suffering from purpura. We are at present repeating this experiment with the view of producing an anti-platelet serum and if possible applying it to human beings. The purpuras constitute a great variety of cases, differing only in details.

Purpura is not an hereditary disease, although in exceptional instances several cases have been found in one family. In one of our cases now under observation, a child with a normal coagulation time and an intensely prolonged bleeding time, the blood platelets were markedly reduced, and it was found upon further investigation that a similar condition of delayed bleeding time and blood platelet reduction existed in the mother as well as in the father.

In this case there is a probability of the cause being an impairment of the nutrition of the blood vessel wall as the result of the influence of heredity from a syphilitic parent. Calcium administration in this case was of no avail, nor is this remedy expected to be of value in purpuric cases. Unless improvement follows the administration of human serum, this patient will not be operated.

A number of cases have been reported in which the coagulation time and the bleeding time are prolonged and there is a diminution of blood platelets. These cases are very rare, and seem to be a combination of the two diseases.

In anaphylactic conditions the coagulation time is prolonged and very often the bleeding time also prolonged. We have been confronted with this problem in several cases suffering from anaphylaxis due to asthma or pollinosis, where there existed in addition a disease which required operative interference.

R. W., a young woman, with a markedly delayed coagulation time, suffers from asthma due to horse dander. This was successfully treated by immunization methods. In addition there is a complicating ethmoiditis. An unusual degree of secondary oozing for five days took place after the local nasal operation.

It has also been observed that the children of individuals who have an anaphylaxis, who themselves show no symptoms of a disease such as asthma or pollinosis, manifest, however, a decided alteration in the blood coagulability, the same as the parent.

Haemorrhage may be divided, from the therapeutic standpoint, into two classes: continuous, slow, oozing of blood; and active bleeding from a severed or lacerated blood vessel. It should not be a great problem to effectually check the latter variety, even though its site may be difficult of access. The treatment of the former condition depends upon a great many factors. Is the bleeding due to haemophelia, the purpuras, leukemia, anaphylaxis or any other condition in which the coagulation of the blood is prolonged, or is there a disturbance in the nutrition of the lining of the blood vessels, or is there some subtle toxin which produces a destruction of the blood platelets, or destroys the red blood cells, or is there a combination of one or more of these factors?

Therapy, human blood serum, or in its absence of that, diphtheria antitoxin, may be administered either subcutaneously or intravenously. We have given transfusions of whole blood with exceptionally good results in several cases. Of course, in the cases of haemophelia or purpura, the effect of these treatments is only temporary, insofar as it checks only the monentary tendency to bleed or the haemorrhage after operation; it does not cure the primary condition. Many substances have been used which have been found effectual in checking the slow, continuous oozing which has occurred either spontaneously or following operation.

Among these we may mention coagulen, which consists of blood platelets of the horse; thrombokinase, made from the pig's lung,

and thromboplastin, which is macerated brain tissue suspended in saline solution. This last preparation was originated by Hess, and has for its object the counteraction of the antithrombin in the blood; it is efficacious in stopping capillary oozing of moderate severity.

Lowenberg and Rubenstone have recently conducted an experimental research in the effect of glycerinized extracts of visceral tissues on the coagulation time of the blood.

They found that the normal tissue extracts uniformly accelerate the coagulation time of the calcium plasma, and that most of the hemophilic tissues, with the exception of thyroid and liver, seem to exert almost the same influence on coagulation. Thyroid gland and liver not only caused a prolonged coagulation time amounting to two and one-half times the corresponding normal tissues, but actually inhibited the action of the calcium added to the plasma, so that the coagulation of the calcium plasma was prolonged almost two minutes.

These observations were repeated with uniform results, and though admittedly limited to the tissues of one hemophiliac, yet they are strikingly significant, in that there is a possibility that the thyroid and even the liver may secrete an antithrombic substance or enzyme which may be in part, if not principally, the cause of the deranged coagulative mechanism of hemophilic blood.

There are various other biological products which are more or less efficacious, but are too numerous to mention and bear very little relation to the ultimate object of this paper. Calcium salts have been found to be occasionally successful in reducing the coagulation time in those cases in which it is prolonged. When the coagulation time is normal, calcium salts have no effect. This was demonstrated in a series of fifty children having normal coagulation time, who were fed with calcium lactate with no influence.

One of the most difficult conditions to combat is when the bleeding time is prolonged. We have no means at present of absolutely counteracting the substance in the blood which destroys the blood platelets, lessens the resistance of the blood cells or causes a disturbance in the nutrition of the lining of the blood vessel. Occasionally, however, the bleeding time may be shortened by administration of large doses of human serum, as the following cases among a series demonstrates.

A brother and sister were advised to have their tonsils and adenoids removed. In the girl the bleeding and coagulation time was over fifteen minutes, and in the case of the boy, the bleeding time was eight minutes, and the coagulation time fifteen minutes.

Unfortunately at the time, owing to war conditions, we were unable to procure brilliant cresyl blue, which is used in counting blood platelets and this phase of the case was necessarily neglected. The proposition which presented itself was, therefore, one in which the bleeding time and coagulation time were inordinately prolonged, and the other in which the bleeding time was within the range of normal, but the coagulation time was prolonged. Both children were given calcium lactate in large doses over a period of a number of days without appreciable effect. Ten c.c. of the serum obtained from the father's blood was injected intramuscularly into each of the children. One day later the coagulation and bleeding times of the girl were found to be twelve minutes and sixteen minutes, respectively, and in the case of the boy, nine and ten minutes respectively. It was decided to remove the tonsils and adenoids of the boy. He bled considerably during the operation, but not sufficient to be disturbing. Five days after the first serum injection the girl was again given ten c.c. of her father's blood serum. The bleeding and coagulation time two days later was found to be seventeen and nine minutes, respectively. Because the bleeding time still remained prolonged it was decided to defer the operation. Four months later the girl was again tested and her bleeding time was found to be fifteen minutes, and the coagulation time twelve and one-half minutes. Again ten c.c. of her father's blood was injected intramuscularly, and two days later the coagulation time was seven minutes, and the bleeding time six. Tonsillectomy was then performed without any undue bleeding taking place.

In conclusion, let me say that these observations are recorded for the purpose of showing the importance of a little more care in not rushing our patients into operations without sufficient preliminary examinations, and of stimulating further investigation along similar lines hoping to localize the offending principle causing these idiopathic diseases.

A DEFINITE SOLUTION OF THE STAMMERING PROBLEM.

MR. ERNEST TOMPKINS, Los Angeles.

Must our knowledge of stammering always be unmitigated confusion? Must we always have the disorder with us? Must our efforts to help the stammerer always be practically useless or worse? No. Emphatically, no, to each of these questions. But in order to bring about the reformations we must advance what is good in the field, even if considerations for individuals restrain us from opposing what is bad.

A recent article which contains a high proportion of value is Dr. Kenyon's "The Problem of Stammering and Its Solution" in THE LARYNGOSCOPE for September, 1918. Let us endeavor to extend the usefulness of that article.

We are constantly reading of the antomical defects of the stammerer. But Dr. Kenyon says truly, " . . . no constant or characteristic anatomical imperfection of either the cerebral, or nervous, or peripheral organs related to speech is known to be present." And he might have just as truthfully added, that those who ascribe to the stammerer that which he has not are propagating superstition.

Who realizes the import of this statement that no anatomical imperfections are known to be present? Who realizes that it makes the field almost a howling wilderness? The Bluemel theory, the Swift theory, the Denhardt theory, and innumerable others are by rights swept away. But are they really swept away? No. Even if their advocates cease to advocate them, as they should, both for the good of humanity and for their own reputations, those theories are so rooted and grounded that a discouraging amount of slashing and hacking must be done before the way will be cleared for the truth.

We have been told of the bad character of the stammerer—immorality and so on. But Dr. Kenyon truly says, " . . . except for the effect on character resulting from the stammering, the stammerer does not differ from other people." Fletcher says practically the same. Hasten the day when no authority maligns the stammerer.

We have been told of marvelous cures made at institutions for stammerers and the dear public seems to believe in the authenticity of those cures as thoroughly as it believes in the ill luck of the

number thirteen. But Dr. Kenyon says, "The idea that stammering is recoverable except through disciplinary self-control under the ordinary conditions of life is a false therapeutic principle." In other words, the alleged cures are practically all temporary abatement of the difficulty, and the impediment returns to its victim when he returns to his natural environment.

We might go on and quote other admirable statements from Dr. Kenyon's article, but the available space may be used to better advantage by rounding-out his views to a thoroughly practical application. He stopped short of that. He told us how to get ready to do something, but did not tell us just what to do.

The readers in the subject of stammering are so accustomed to discounting what they read that it is almost impossible to make a new truth stay with them. To endeavor to fasten it with a rigid demonstration is to weary them or make them suspicious of another dose of sophistry; to endeavor to make it stick by emphasis of statement is to make them cry "dogmatism;" how can it be made to stick? Possibly success may be obtained by preparing them, and then by both emphatic statement and by demonstration.

If the reader will think of the volumes that have been written on the subject of stammering he will see that a vast amount of observation has been made. A large proportion of that information must be reliable. Now observation is the basis of scientific deduction—not to mention unscientific speculation. Even if no scientific deductions have been made as to the nature and treatment of stammering, such deductions might appear at any time, for the quantity of observations is more than ample. Does the reader realize then that the long sought truth may be near at hand or even immediately at hand? So much for the preparation.

Now for the statement. Practically the whole truth about stammering is known. Someone will ask why it is not generally recognized. Let the reader answer that for himself, for we will present the matter so clearly that the fault will not be in the presentation.

The demonstration of the nature of stammering and of its treatment may be based on unlimited evidence available. Since Dr. Kenyon's article is under discussion, let us select the basis from it. He, " . . . believes . . . the stammering finds its inciting cause in the social emotion present, and the social emotion is also much augmented by the embarrassment resulting from the peripheral phenomena." To satisfy the reader that our basis is firm we will state —and are prepared to prove—that Dr. Kenyon's belief is a fact.

Conisder then that, "the social emotion is also much augmented

by the embarrassment resulting from the peripheral phenomena." How can we prevent the augmentation of the emotion? Why, by preventing the peripheral phenomena. In plain language, stop the stammering. Prohibit the stammering. The stammerer may substitute synonyms, he may wait until fluency returns, he may make signs, he may write, he may remain silent. The stammerer's friends do not let him stammer; they help him to avoid stammering.

Consider now the original emotion. How did it arise? A case originating by imitation will show us. A fluent talker consciously interferes with his automatic speech, for fun. He continues the fun until it becomes serious. He then *fears* the impediment will "catch." Right there is the origin of the emotion. He makes the interfering efforts under the influence of the fear; the ridicule is visited on him; and thenceforth the ridicule augments the fear and the fear impells the effort. The origin by association is the same, except that the speech interference is begun unintentionally. In cases arising from sickness, fright, exhaustion, and so on, unconsciousness or debility interrupt normal speech and the efforts are begun in order to correct the interruption. Each of these efforts blocks normal speech, the emotion is augmented, and so it goes until the victim is so possessed by the fear that years of patient endeavor are necessary to rid him of it.

The principle of recovery is readily deduced from the disorder itself, even if we lacked (and we do not) other evidence. Do stammerers become dumb? No. But if the emotion continues to augment, why do they not become dumb? Because it is practically impossible to entertain that fear all the time. Dr. Kenyon has noted the chief characteristic of the disorder, namely intermittence. When the fear is allayed the stammering disappears, fluency returns, and the emotion is thereby diminished instead of augmented. Is it incomprehensible that the stammerer's fluent periods decrease his emotion since his obstructed periods increase his emotion? Is that conception illogical? Well, whether you find it illogical or incomprehensible, an overwhelming weight of observation supports it, and therefore you have no alternative than to accept it, provided you are scientific.

Now for the crux of the whole situation. All that we can do for the stammerer may be stated in nine words, ***namely, decrease his obstructed periods and increase his fluent periods.*** Every recovery that has occurred and evidently every recovery that ever will occur depends on that principle, rather on the combination of the two principles involved in that statement. The rapidity of recovery is

proportional to the promptness and efficiency of application of the two principles. However, rapidity is not the word to use, for recovery from stammering is never rapid. Properly, the more prompt and more efficient is the application of the principles, the less slow is the recovery.

Here is the place to take the bull by the horns. Will exercises increase the stammerer's fluency beneficially? No. They increase it harmfully. How do we know that? From many things, but we may mention a few of them. Exercises inculcate conscious speech efforts, but such efforts are to be avoided. It is a fact that this exercise form of curing stammering actually inculcates intensified stammering. And that brings us to another evidence of the injuriousness of the exercises, namely the relapse to near-muteness of practically every conscientious user of those exercises. There are a few exceptions, but a very few, and their recovery is accounted for by favorable environment which overbalanced the injuriousness of the exercises. Exercises attract the stammerer's attention to his speech, and we know that he stammers when his mind is on his speech. It is true that they produce fluency in the environment of the cure, but that is because they act there as distractives. In a natural environment and under the influence of fright the effort to talk by means of those exercises produces literally frightful contortions. Indeed, the worst stammerers we have are the most conscientious graduates of these stammering schools.

I recall a young man who was so unfortunate as to have enough means to enable him to spend a large proportion of his time at a stammering school more highly recommended than any other that I know of in this country. He was expert in the numerous exercises and he had read the selections in the book until he could repeat them from memory. His throat and facial muscles were noticeably developed by his constant vocal training. In the school he was perfectly fluent, and he was frequently called on to talk according to the Denhardt method—which, incidentally, the "professor" represented to be his own. But when that young man went to the ticket office and endeavored to buy a ticket by the Denhardt method, deliver us from being within sight or hearing! His face became purple, those over-developed muscles stood out like great cords, his body shook with the effort. It was horrible. And that is what the exercises are doing for the stammerers.

Dr. Kenyon's classification of treatments might advantageously be amended. He lists (1) prophylaxis, (2) private treatment, (3) efforts applied to the public schools. We suggest (1) prophylaxis,

(2) home treatment, (3) school treatment, (4) private treatment.

Prophylaxis. The general inducing causes of stammering are too well known to need listing here. The effect of association with a stammerer may be overcome by suppression of the stammering, otherwise children should be kept away from him. If stammering is repressed or suppressed, as the case may be, it will not be imitated; but imitation should be repressed, anyway. False faces, ghosts, and other needless frights should be kept away from children. This is about as far as prophylaxis can conveniently go, and much stammering will be obviated thereby. But falls, sickness, unavoidable frights, exhaustion, and so on can probably not be much more effectively guarded against than they are already, so a considerable proportion of the disorder will occur.

Home treatment. Prohibit the convulsive effort. Also, reduce the temptation to stammer. The child should be made to understand that stammering will not be tolerated; that it may decline to answer questions; that it need not meet strangers; that it need not answer the ring of the door-bell or the telephone bell; that it need not deliver messages, except written ones;—in short, that it has no speech responsibility. If it can write, it should be required to carry a pad and pencil and use them if necessary. In the case of a child, actual use of the pad and pencil will generally not be necessary. The mere act of reaching for them will generally supply sufficient distraction to release the normal speech. So much for the discouragement of the stammering. To cultivate spontaneous speech the child should be provided with congenial company, and all its associates should be enjoined to help the child to refrain from stammering. Child life is generally so care-free that even a child with considerable inclination to stammer will be practically fluent when with another child and distracted by amusement. But when the amusement turns to weariness or fretfulness, some change should be made; for weariness and impatience are developers of the inclination to stammer. A bath, a nap, perhaps some nourishment—an observing mother can suit the distraction to the occasion—will bring about the contented disposition which promotes fluency.

School treatment. Here is where we seem to antagonize the special teacher who is inculcating exercises or cultivating visualization or detecting complexes. If the condemnation of these methods was erroneous, then there would be cause for antagonism; but the condemnation is valid. The motive for antagonism is possible loss of position. But what more sure way of losing her position can a teacher find than to persist in injuring the pupils entrusted to her

care? And what more sure way of keeping her position can a teacher find than to render to her pupils the greatest benefit? A wise teacher will be quick to investigate anything which is beneficial to the pupil, and to herself. But whether the special teacher educates herself or not in the subject of stammering, the public is being educated; and it will not be long before the error will be driven out and the truth will be welcomed.

The universal feature of the school treatment will be—notice, not should be, but will be—prohibition of stammering on school property; for that is the feasible way of obviating the spread of the disorder by contagion and of preventing the injury done to the stammerers by means of the oral recitation. These two gross injustices —the one, in direct violation of law, to the non-stammering pupils; the other, in direct violation of right, to the stammering pupils—are deliberately encouraged by those who profit from the disorder (See The Survey, June 29, 1918, Vol. 40, No. 13, p. 337; and of January 25, 1919, p. 575). The prohibition of stammering on school property of course involves the elimination of anything which would encourage stammering. The afflicted pupils will be freed from all speech requirements—no roll call, no oral recitations, no oral messages to other teachers, and so on. This simple reformation will bring about the recovery of the stammerers during the ordinary course of schooling.

Where special treatment is to be given in the public schools, that treatment should be on the lines already laid down for the home. Discouragement of the obstructed periods comes first. The stammering pupil should be required to carry at all times a pad and pencil so that he may write instead of stammer. Very young pupils may recite in concert and read in concert until they learn to write; for vocalization in concert is neither difficult nor injurious to the stammerer. The means of increasing the fluent periods are legion, and the competnent special teacher will find scope for all her ability. Although the stammerers who repress their convulsive efforts should not be segregated from the other pupils, still they should have the greatest possible opportunity for spontaneous speech. Their study periods should be under no restrictions as to silence; but on the contrary, they should be encouraged to converse, always provided that stammering is not indulged in. If the stammerer has a non-stammering chum, and both of them have the privilege of studying together, that arrangement is preferable to the pairing-off of two stammerers. But in any case, talk, talk, talk is the stammerer's need, and the teacher should see that the need is facilitated. The

special teacher—indeed, every teacher,—should carefully read Dr. Liebmann's, "Die Psychische Behandlung von Sprachstörungen," which is neither so formidable nor so long as the title might indicate, and which contains detailed descriptions of methods of encouraging the fluent periods.

Private treatment. This is fundamentally the same as the other treatments outlined, but it is complicated by exigencies not found in the home and in the school. As Dr. Kenyon has noted, society makes the stammerer stammer, yet the stammerer must recover his speech, if he recovers, in society. Consider first the stammerer himself.

The stammerer who would recover must abandon the habit of *trying* to talk and must acquire the habit of circumventing the inclination to stammer. Rather, he must fully develop the latter habit, for he has it already; as is shown by his use of synonyms, of interpolations (such as, "ah," "actually," "let me see," "I can't think," and so on), of evasions, and of many other means of hiding his impediment. However, when the subterfuge fails to work, he is likely to make the convulsive effort. He must resolutely decline to make the effort. That is evidently what Dr. Kenyon meant when he emphasized the necessity of self-control on the part of the stammerer. A pad and pencil should always be carried, and should be used whenever embarrassing communication is necessary, as is apt to be the case when purchases are made, when specific orders are to be given, and so on. The patient should also agree to tell his auditor that indulgence in stammering is forbidden and that the auditor's assistance to that end will be gratefully appreciated. Right here the physician may wisely decide whether it will be advantageous to continue with the patient or not. If the latter will not use the pad and pencil and if he will continue to hide his impediment from his auditor, there is little chance of his recovery, and the physician who labors with him will almost surely be discredited.

The stammerer's friends should keep stumbling blocks out of his way. He should have the minimum of speech responsibility. If an introduction is necessary, some friend should immediately make it, in order to relieve the stammerer of the responsibility. If a telephone message is to be delivered, the stammerer should not be made responsible for it. A stammerer who was a guest at a party was asked by the host to call up the garage and order the automobile. What was to be done? To decline to comply would seem ingratitude; to comply was to court disaster, and to bring back the fear which was slowly and laboriously being overcome. The stammerer wisely led the host aside, explained that he should not endeavor to

telephone, received a willing excuse, and thereby won a victory in his fight for free speech. This incident shows how kind and helpful society can be to the stammerer when his needs are understood. The present cruelty is due to failure to realize that all speech conventions should be abrogated for the stammerer. He should not be required to talk any more than a dumb man is. The physician should make it his business to see that all those who control the routine life of his patient remove incentives to stammering; the teacher is not to exact oral work; the employer is to make all reasonable exceptions, such as relief from telephoning, dictating, transmitting orders orally, and so on; the family is to defer to the stammerer's wishes in all things concerning speech. So much for the restraint of the convulsive effort.

The cultivation of spontaneous speech should be kept in its proper place in the treatment. It is not, as is generally supposed, the primary consideration. When the physician has accomplished what has been outlined, his patient is recovering; the cultivation of spontaneous speech merely increases the rate of recovery. The physician will be sorely tempted to use exercises, or the drawl, or some of the other common producers of "get-rich-quick" results. Stop and think. Those results depended on general ignorance of the nature and the remedial treatment of stammering, a condition which will not much longer be dependable. Whoever treats stammering is likely soon to learn that it is better not to monkey with the stammerer's speech. He is probably the last worm to turn, but he has started. Above all things, the so-called Denhardt method, which is singing, denatured of pitch, should not be used; for it is as much of an intensifier of the real difficulty as it is a producer of quick results.

Spontaneous speech may best be cultivated with the assistance of the stammerer's friends. This ought to be evident from the length of time necessary for the recovery of a chronic case, in regard to which again give Dr. Kenyon credit for plain speaking. Most authorities are too much committed to the six-weeks' cure to vouchsafe more accurate information. It would necessitate an enormous fee to pay for sufficient professional time to accomplish the stammerer's real recovery—that is, the dissipation of the fright for all ordinary conditions. Apparent freedom from fright may soon occur; but the real freedom is discouragingly slow. By conferences with the stammerer and his friends, the physician may arrange for much "easy" talking. If the patient is a clerk, he should be placed within talking distance of another clerk and have permission to con-

verse as much as the business will allow. Certain forms of soliciting are beneficial to the stammerer. I know several commercial salesmen who have recovered without any special treatment: constant talking under conditions comparatively free from embarrassment had been sufficient to restore their confidence in their ability to talk.

On the contrary, door-to-door soliciting is likely to be detrimental on account of the number of strangers to be interviewed and the embarrassment of such work. The patient who is not disposed to go out of his way to cultivate spontaneous speech will almost surely be a discredit to his physician; and the two had better settle that early in their association. The patient's friends should be enlisted to keep him company, and to keep him engaged in conversation. A brother can invite him to go walking in the woods, in which surroundings the stammerer is apt to be fluent; a sister can invite him to escort her to a dance, which also is apt to be a favorable environment; but she should ask for the transfers, do the introducing, and otherwise relieve him of all speech responsibility. The thoughtful physician, with knowledge of the patient's surroundings, can arrange to keep him engaged in conversation.

The reader who is familiar with the current treatments may say of this one, "What a disappointing treatment!" Just so, the physician who cured dyspepsia by a bottle of medicine thought it disappointing to descend to the prescription of a rational regimen and then to earn his fee by desperate efforts to obtain the observance of the regimen. Disappointing or not, the new treatment is unavoidable. But who will be disappointed by the dispensation of real, instead of transitory benefit? And as to the treatment being new, why every recovery that has ever occurred has been according to it. Think of all the cures claimed by all the methods; and then ponder on the fact that where recovery has actually ensued, that recovery has been by means of the essence of the new treatment, namely by the preponderating influence of fluent speech over obstructed speech: when the fluent speech builds up more confidence than the obstructed speech knocks down, then recovery is in progress.

But how about the recovery of A— B—, whose glowing testimonial is widely circulated by the C— school for stammerers? Why A— B— attended that school, and was "cured" in three weeks. He could go out and ask the news boy for any one or more of the dailies; he could sit down in the park and talk with a hobo, even defending the negative in an argument of "Resolved, that anarchy is preferable to the present social condition;" he could stand up before the whole class of stammerers, not to mention also some parents of prospective

members, and recite "Horatius at the Bridge;" he could do all that was expected of a star graduate; and the testimonial that he left was as glowing as his speech was fluent and as his spirits were exuberant. But when he got back home and old associations revived the old fear, he realized that his apparent cure was only temporary relief; yet everyone was congratulating him on his "wonderful recovery." Goaded by his pride, he determined to justify appearances and the testimonial which had been wheedled out of him. He rigidly declined to stammer; and he happened to be one in a hundred whose environment enabled him to do so.* Within a year his confidence in his speech ability had increased sufficiently to induce him to continue to decline to stammer. Within five years the old fear of difficulty no longer haunted him, although he had to exercise self-control when asked a question suddenly or when asked to repeat something that he had just said. And when one after another of the pupils of the C— school for stammerers relapsed into a worse condition than their first, the principal of that school suavely advised them, "It is your own fault; look at A— B—, who was cured by our method." So the cures which are paraded before us by the "I-have-cured-thousands" individuals are really the result of favorable environment and long-continued self-control on the part of the recovered stammerer. Why should the physician hesitate to adopt the treatment which has to its credit all the widely heralded cures? But these results are insignificant in comparison to the great number of unheralded cures.

The great and unquestionable warrant for the treatment which has been outlined is found in the "spontaneous recoveries," as Denhardt calls them, or "outgrowth," as the public calls them. Dame nature is so formidable a rival of the stammering schools, that the latter are continually denying her results by vociferating that "there is no such thing as outgrowth," or that "real stammering is not outgrown," and so on. But the fact is that approximately half the stammering *is* outgrown. The girls recover as a rule, although some lucky boy-stammerers proceed to recovery through essentially the same environment, namely discouragement of the stammering and encouragement of fluency. The ladies, having quantities of what the men call "trivialities" to discuss, do a considerable amount of spontaneous talking. The little girl-stammerer profits by this—

*"Thus we have apparently two permanent cures in two hundred cases, with one of the cures to be heavily discounted. This percentage is in no way exceptional. The principal of one of the foremost Swiss institutions has recently abandoned his work because he was unable to cure more than four or five per cent of his cases." C. S. Bluemel. Stammering and Cognate Defects of Speech. Vol. II, p. 266.

shall we say?—incessant talking, and she is generally admonished when she stammers, "Do not talk that way, or you will never get over it." Here we have the necessary conditions for recovery, namely discouragement of stammering and encouragement of spontaneous speech; and we also have the results, for the girls who are so situated recover.*

CONCLUSION.

The solution of the stammering problem is *stop stammering*. The sooner that is done, and the more the spontaneous speech is cultivated, the sooner will the problem be solved.

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*Pedagogical Seminary, March, 1916, Vol. XXIII, No. 1, p. 127; also June, No. 2, p. 153. Scientific American Supplement, July 6, 1918, Vol. LXXXVI, No. 2218, p. 10.

VOICE AND VOCAL PROJECTION.

Dr. John J. Levbarg, New York.

Voice is produced by the vibrations of the vocal cords due to the expiratory blast of air emitted from the lungs, and the quality is reinforced by the resonating chambers. To produce a correct vocal sound, five most important parts are active: (1) Motor—lungs; (2) Vibrator—cords; (3) Resonators—pharynx, nose, cavities of the head; (4) Articulators—lips, tongue, teeth; and (5) Thought—brain.

As in musical sounds, so in the voice, the three properties of intensity, pitch and quality are to be found.

The intensity depends upon the amplitude of the vibrations on the vocal cords, the force of air and the resonance cavities.

Pitch depends upon the length, thickness and tension of the vocal cords. Thus, you will find the female voice is of a higher pitch than the male, because of the lesser length of the bands in the female than the male.

The quality of tone or timbre of the human voice is due to the fundamental and overtones produced by the vocal cords and reinforced by those of the cavities of the head and chest acting as resonance chambers. The greater the number of vibrations of the cords the higher the tone.

The singing voice begins about the fifth year and changes very slightly until puberty. At puberty there is a great change, especially

in boys. The voice in boys at that period becomes deeper or lower in pitch, thereby assuming the voice of an adult male. In girls there is some trivial change, but it is less noticeable. This period in which the voice changes and assumes its proper color, is known as the transition period. It usually occurs around the age of fourteen or sixteen years. At this period proper pains and attention should be given that the vocal cords should not have special stress put on them, as co-ordination of the surrounding tissues is disturbed by the changes which are taking place in the cords, and the shape, size and position of the laryngeal structures. During this period rigorous exercises should be avoided and in its stead a course in hygiene of health, proper exercises to develop especially the medium register, the theory of music and last, but not least, some musical instrument should be taught them. The proper time for one to study singing earnestly should be about the age of eighteen.

The range of the voice constantly increases with age, and the voice becomes stronger and richer in tone. Male and female voices gain in volume and in tone up to forty years of age and after that period, they do not gain any more, as the laryngeal structures become harder; the cartilages changes practically to bone, and the soft tissues become stiff and lose its flexibility.

In voice training it is essential that the pupil educate his mind. Education of conscious control helps toward direct control of the voice. Mind has control over all matter. The brain and spinal cord are the chief nerve centers, and all voluntary and involuntary action is directly or indirectly controlled by the cells in the nerve centers. The impulse from the centers are disseminated to every part of the body, resembling a great telegraphic system. The brain is the chief office and the cord and its nerves emanating therefrom are its branches. The faculty to think correctly and to govern oneself is situated in the brain. The brain is supplied by a great arterial system and in order to have good thought we must have good health. Breathing correctly gives us a good oxygen supply and oxygenated blood is the proper food for the mind.

There are no two singing methods alike. Two successful singers may sound a good deal alike, yet upon analysis the production will be found to vary greatly. Voices cannot be manufactured. Human voice is a very delicate instrument. It is susceptible to injury in a great many ways. Too much stress should not be put upon the vocal apparatus. Too much concentration on the muscles instead of the production of tone loses its naturalness. A singer who will never sacrifice his pronunciation for tone effect is sure to sing prop-

erly; but one whose diction is sacrificed in order to help tone is absolutely wrong. The proper pronunciation of a, i, e, o, u, will force the whole vocal apparatus to work with equilibrium and balance.

The voice has value only at the point to which it is addressed, namely, the audience. The human voice is able to carry to a great distance. In order to be able to carry the voice a great distance, it is necessary to concentrate the vocal effect in the mouth, as far forward as possible, at the same time focusing the tone at a desired point in the distance. It is helpful to fasten the gaze upon the person or place at which we intend to speak or sing; this assists in tone carrying capacity. Vocal projection or tone focus must be studied, not from the mechanical viewpoint, but from the mental. We should not attempt to listen to our tones as they leave the larynx, but should endeavor to hear them at the point of destination.

If the tone is perfect the production needs no correction. A full, flowing, sonorous, resonating tone, the product of complete naturalness on the part of the singer reflects his or her individuality. Individuality should be developed by each student as individuality creates a new type of singing.

The phonograph, although not in any sense a vocal teacher, is of great value to a singer. It reveals to the student his defects as well as his strong points. Faulty breathing and errors of diction, interpretation, tone placing are distinctly revealed.

The art of expression is a special talent which should be cultivated and developed with the aid of our imagination. A singer or speaker should leave with the audience the story, and the feeling of the song; not the impression of wonderful tone production. Vocal expression or interpretation must be instinctive, must be felt by the singer, who must for the time completely forget himself and his lessons.

In conclusion I may add that it is essential that a pupil be early convinced that the ear is the most important instrument in the process of producing and controlling tone. The ear must be trained to listen to the sound as it returns from its destination. By practicing diligently to hear correctly, will eventually enable the individual to hear himself as others hear him, and also help to improve his faults.

I acknowledge with many thanks the kind help rendered to me by Mr. Thaddeas Wronski, of New York, on tone focus.

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SURGICAL TREATMENT OF CANCER OF THE TONSIL, WITH A REPORT OF CASES.

Dr. John McCoy, New York.

In this paper it is the writer's idea to report his observations on four cases of cancer of the tonsil, all of which have been treated by operative measures, and a fifth case which is undergoing treatment preparatory to operation. In all of these cases the operative technique has been the same and is as follows:

At first a Wassermann is taken, also a section from the growth for microscopic examination. In the meantime the patient is referred to a dentist for a thorough sterilization of the mouth. The operation itself is performed as follows: An incision about 2½ to 3 inches long is made at the anterior border of the sterno-mastoid muscle. The glands overlying the jugular are then dissected out. The facial vein is ligated in two places and then cut between the two ligatures. The external carotid artery is then tied off with a heavy ligature. The dissection is continued on up in the neck until the posterior belly of the digastric muscle comes into view. The muscle is then pushed aside, as are also the stylo-hyoid and the stylo-glossus, when the superior pharyngeal constrictor comes into view. The field of operation is then changed to the throat. Through the mouth the tonsil and infiltrated areas are thoroughly dissected out. An incision is then made through the superior constrictor in the neck and a strong light is then thrown into the wound through the opening in the mouth and also through the opening in the neck, enabling us to thoroughly remove any portion of infiltrated tissue that may be seen. This is especially looked for at the base of the tonsils, where it connects with the tongue. In the later operations we have then resected 2 or 3 inches of the sterno-mastoid muscle and the tissues about it for the purpose of preventing recurrence in the neck. The wound in the neck is then partly closed by retaining sutures after packing with gauze and the wounds are allowed to heal by granulation.

Report of Cases.

Case 1. Mr. Isaac W. Age, 57. Native of Hungary. Cigar maker by occupation. Was first seen Nov. 19, 1917, the patient gave a history that he felt a soft lump in the left side of his throat for about three or four weeks. Examination showed a mass projecting

into the throat from the left tonsil and posterior pillar about the size of a walnut. Three small glands could be felt in the neck. A Wassermann was taken, which proved negative, and a section from the growth was taken, which proved to be epithelioma. On Dec. 6, 1917, operation was performed as described above. Twenty milligrams of radium were applied to the wound in the throat every four days. On Dec. 20, the patient left the hospital with wounds all healed and there has been no recurrence to date.

Case 2. John M. Age, 58. Native of Ireland. Laborer. First seen July 3, 1918, the patient gave the following history: He is a heavy drinker and smoker. Two months ago he noticed pains in the left side of his throat. Examination showed a cauliflower growth springing from the left tonsil and infiltrating the soft palate, gums and tongue. A large bunch of glands in the left side of the neck, about the size of a lemon. A section was removed, which showed epithelioma. June 12, under local anesthesia, the glands were dissected out and the external carotid artery tied. On June 19, under rectal anesthesia, the tonsil and surrounding infiltrated tissues were excised through the mouth and neck. Radium was applied every four days after this to the wound in the mouth. On July 10, a hard growth reappeared on the left side of the tongue and there was a gradual recurrence of the growth in the tissues of the neck.

On Aug. 1, the external carotid on the right side was tied off and one-half of the tongue was dissected out. A dissection was also made of the tissues in the neck. In spite of this there was a recurrence in the tissues of the neck. This patient passed from the writer's observation and has undoubtedly succumbed to his malignancy.

Case 3. Mr. C. B. Age, 75. Native of U. S. The patient was first seen July 3, 1918. At that time he gave a history of soreness and swelling for four months. Examination showed an ulcerating growth involving the left tonsil and pillars and slight infiltration of the tongue at the base of the tonsil. A few small glands could be felt in the neck. Section taken proved to be carcinoma. Operation July 11 under ether anesthesia. He was operated as described above. Radium was applied to the wound every four days and he left the hospital in two weeks. The writer has heard from this patient every few months and there has been no sign of recurrence to date.

Case 4. Mr. W. J. H. Age, 63. Native of U. S. Watchman by occupation. The patient was first seen June 28, 1918, and gave the following history: Soreness on swallowing for the past six weeks. Examination showed an ulcerating growth on the left ton-

sil, anterior pillar and posterior pillar. A bunch of glands, size of a horse-chestnut, could be felt in the neck. Section from the growth showed epithelioma. Operation July 2, under rectal anesthesia as described above. The glands in the neck were very adherent to the jugular. He was discharged from the hospital on July 17. Two months later he showed a recurrence in the tissues of the neck and a metastatic deposit in the glands of the opposite side of the neck. Further operation was not made, but he was placed under radium injections in capillary glass tubes directly into the infiltrated area and the operated side of the neck and also into the glands of the opposite side. He has been making a slow but steady recovery, in that there has been a gradual diminution in the infiltration and a gradual subsidence of the metastatic gland on the opposite side. He is still undergoing treatment.

Case 5. Mr. Joseph B. Age 54. Native of Russia. The patient was first seen Dec. 1, 1918, when he gave a history of pain on swallowing, beginning about five months ago. The examination revealed an ulcerating growth involving the tonsils, posterior pillar and left half of the palate, anterior pillar and gum, also the left half of the tongue extending forward about one-half way to the tip. Several small hard glands could be felt in the neck. A Wassermann was negative and a section from the growth proved it to be epithelioma. This case was considered too extensive to warrant a successful result from operation at that time, so he was placed upon injections of radium emanations in capillary glass tubes. The growth is gradually subsiding and we feel that he will soon be in condition for a successful operation.

In conclusion, the writer feels that an operation in the early stages of the growth by means of the above described technique will give a good prospect for ultimate recovery. In cases where the infiltration is extensive it is better to have the patient first treated by means of radium injections through which the tumor seems to lose its malignancy and an operation after this offers good prospect of recovery.

157 West 73rd St.

A CASE OF FULMINATING ETHMOIDITIS WITH METASTASIS.*

Dr. Ira Frank, Chicago.

Though the literature on the diseases of the accessory sinuses of the nose abounds with frequent references and case reports of acute suppurative disease of the ethmoidal labyrinth complicated with orbital abscess or subperiosteal empyema of the orbit, I have been unable to find recorded a case in which the course of the process was as short as in the present instance. Moreover, I am unable to find reference to remote metastatic abscess occuring in the course of the acute disease. It is for these reasons, which I believe to be of interest, that I take the liberty of presenting the following history.

Mr. A. B., a youth of 19 years, came under medical attention twenty-four hours after the onset of an attack of grippe, occurring some time previous to the recent pandemic. His complaint at the time consisted of malaise and moderate cough, and physical examination substantiated a diagnosis of a very mild bronchitis. The temperature record showed an elevation of a fraction of a degree. The following day an additional symptom of general frontal headache was complained of, though not sufficiently to suspect the discomfort to be other than an ordinary grippe manifestation. During the next twenty-four hours the cough and malaise remained unchanged, but the headache was no longer complained of. On the fourth day of the illness the headache returned, locating in the right frontal region, this time more severely, and the patient complained of a moderate coryza. By the next morning the frontal pain was sufficiently intense to suspect sinus disease, and the physician in charge put the patient on a treatment consisting of an adrenalin nasal spray and urotropin internally. There was no discharge from the nose other than small amounts of clear mucus, and this character did not change until the next day, when the secretion became more serous and slightly blood-tinged. By this time the severity of the headache was greatly increased and the patient was quite miserable. He was unable to breathe through the right nostril and complained bitterly of a pain and sense of fullness around the right

*Read before the Central Section, American Triological Society, Saturday, February 22, 1919, Chicago, Ill.

eye. Tenderness was very acute. About eleven o'clock in the morning an edema was apparent in the upper and lower lids, with some redness, and this continued to increase rapidly until the patient was unable, in a few hours, to open the right eye. I was called in consultation at this time.

I found the patient to have a temperature of 99.6°, with normal pulse and respiration. The right eye was completely closed by the intensely red swelling of the lids. The swelling was quite firm and tender, and definite fluctuation was not apparent. Intranasal examination revealed an almost total occlusion of the right nares, due to a tremendous edema of the lateral wall and turbinate bodies, which practically eliminated all landmarks. No pus was visible, but there was an ooze of pinkish serum from the swollen turbinates.

Unable to have an x-ray picture without considerable delay, the patient was immediately moved to a hospital operating room, where after careful application of cocaine and adrenalin I was finally able to remove the anterior third of the right middle turbinate. This procedure freed a large quantity of pus, which was apparently released from the region of the infundibulum and posteriorly. The patient was returned to bed with sufficient nasal packing to control hemorrhage, the packing being removed in a few hours.

On the following day the temperature reached 104.2° by 10 a. m., and though there was a rather free discharge of pus from the right nostril there was no diminution in the patient's discomfort, and no change in the character of the external swelling.

An x-ray picture taken during the morning revealed a very small frontal sinus, a cavity so small that it was impossible to absolutely differentiate it from an ethmoid cell. The ethmoidal labyrinth was distinctly cloudy on the right side.

The patient was again taken to the operating room, anesthetized with ether, and a Killian incision made over the right eye. After retraction of the periosteum an attempt was made to open the frontal sinus at a point corresponding to its probable position according to the x-ray plate. This attempt being unsuccessful, the lips of the incision were more widely separated and the orbital contents were retracted laterally. In the process of raising the periosteum from the orbital plate of the ethmoid bone there was a sudden escape of pus from beneath the membrane. With good exposure of the entire orbital plate, the ethmoid cells were thoroughly curetted from without. A large quantity of thick white pus was liberated from the labyrinth. A gauze drain was inserted externally and the incision partially closed.

Following this operation the expected return to normal temperature failed to occur. Relief from the headache was almost immediate, and the patient was able to open his eye with ease in a very short time. The thermometer, however, continued to register an irregular temperature, varying between 100° and 104.°

The first hint of further trouble was a severe pain located in the left shoulder, complained of on the day following the second operation. This pain became rapidly so severe that opiates were necessary to control it. A blood-culture was taken and a general surgeon was called in consultation. For two days there was no change in the situation, the temperature continuing to rise and fall irregularly and the pain in the shoulder remaining intense. The blood culture proved to be sterile.

On the third day the shoulder was explored with a needle, but no pus was found. The arm was dressed with large, hot, moist applications, and on the following day a swelling was noted externally below the deltoid muscle. The dressings were continued another twenty-four hours, when the patient was again anesthetized and a large submuscular abscess opened and drained. The pus contained a pure culture of streptococcus.

For a very short time after this operation there was a continuation of the temperature, but within forty-eight hours there was a noticeable improvement in all symptoms, which, once started, was uninterrupted and the patient left the hospital entirely well.

104 South Michigan Avenue.

MALIGNANT TUMOR OF THE LARYNX; OPERATION BY DIRECT LARYNGOSCOPY.*

Dr. J. W. Jervey, Greenville, S. C.

In a paper read at the annual meeting of the Medical Society of the State of New York at Albany, in May, 1918, and published in the *New York State Journal of Medicine* in September of the same year, Dr. Hubert Arrowsmith, of Brooklyn, in a postulate as modest as himself, has this to say: "I think it may be stated as an aphorism that the cure of laryngeal malignancy by internal surgery is decidedly more a matter of good luck than good or prudent management."

Let me remark, in passing, and at the outset, that I may not be misunderstood: *Frumentum confiteor.* I am willing, for many reasons, and I think most of us are, to subscribe to the aphorism above. But did I not have recent and excellent precedent for my method—and my good luck? (If it pleases you, Mr. Chairman, we shall say nothing about "prudent management.") For did not the also modest Dr. Harmon Smith, of New York, at a meeting of the Throat Section of the New York Academy of Medicine, in October, 1917, relate of his removal of a laryngeal carcinoma by the internal method, with no recurrence after eighteen months? And did he not afterward naively say: "Of course, had I known that this tumor was malignant, I would not have removed it except by more radical measures." He had mistaken it for a papilloma. I mistook mine for a fibroma. Yet who amongst you is without sin and can cast a stone; and who amongst you can say that Smith's patient and mine are not better off by reason of what might be termed the accidental astuteness of the error?

But our good and able friend, Arrowsmith, does not content himself with the simple statement quoted above. He winds up his altogether admirable paper by ramming his point home, and with a characteristically energetic twist breaks it off with these words: "He is a temerarious operator who intralaryngeally starts anything with a malignant neoplasm. He may in rare instances not have cause for regret—that, assuredly, will be his good fortune—nothing more." Again, let me hasten to endorse the sentiment, at the same time asking your indulgence for a brief relation of a case, which,

*Read at the annual meeting of the Southern Section of the American Laryngological, Rhinological and Otological Society at Richmond, Va., March 1, 1919.

being accepted as an exception, will thereby prove the rule.

On June 22nd, 1918, P. T., male, 50 years of age, cotton mill worker, was referred to me by Dr. R. R. Berry, of Buffalo, S. C. For eight or ten years he has been troubled with an obstruction in his throat which interfered with free breathing. This has very gradually become more pronounced. He has had in the past few years some soreness and difficulty in deglutition, but recently this has been better. The patient is a man of average size and general appearance, and his health has been generally good, save for the nervousness and worry caused by the trouble in his throat. He is convinced that he has some sort of heart disease, because on lying down to sleep the obstruction is more marked. For several years he has had a curious squeaky phonation and almost complete aphonia.

Indirect laryngoscopy readily reveals the source of the trouble as being a deep red, slightly lobular tumor of dense formation, the size of the distal joint of the thumb, attached to the left posterior border and ventricular surface of the epiglottis from about the aryepiglottic fold to the ventricular fold. An opinion as to malignancy was withheld pending microscopical examination of the specimen, but privately, after due consideration of the history (long period of growth, absence of pain and hemorrhage, apparent firmness, smoothness and integrity of neoplasm, etc.), I concluded that the growth was benign and advised removal under local anesthesia. This I did with forceps and snare, with little difficulty, using a Jackson direct laryngoscope, with the patient in the Johnston position.

Immediately following the operation the patient arose from the table, with practically complete restoration of normal phonation. Recovery was prompt and without incident, and there has been no recurrence—eight months having elapsed.

Macroscopically (and while *in situ*) I regarded the tumor as a fibroma, though there was but little hemorrhage (which I feared) following the operation, and I made a note to this effect on my case record. The tumor was sent to Dr. K. M. Lynch, of Charleston, S. C., chief of the pathological department of the Medical College of the State of South Carolina, who reported that the tumor was "apparently endotheliomatous and therefore malignant and likely to recur." I realize that a sufficient time has not yet elapsed for the hope of safety to be indulged in.

A BRAIN ABSCESS DRAIN.

Dr. Alfred Kahn, New York.

The instrument here illustrated, is made according to the opturator canula principle. The canula or drain is made of metal and has a round, smoothly screwed surface—the train is mounted on a leader or opturator—the leader being round and blunt at one end and having a thumb screw at the other end. When the brain abscess is located, the canula, mounted on a rod, is

screwed into the abscess cavity; the leader is now withdrawn, leaving the canula. The abscess cavity can now be packed with gauze through the canula opening. As the abscess cavity heals, the canula can be unscrewed a little at each dressing, until it is finally withdrawn.

50 East 42nd Street.

Heliotherapy in Laryngeal Tuberculosis. C. W. Mills and A. M. Forester, *American Rev. of Tuberculosis,* January, 1919.

The authors are enthusiastic over heliotherapy in tuberculosis of the larynx. The ultraviolet or actinic rays of the spectrum are the ones that produce the beneficial results. The sunlight is reflected into the larynx by means of a metallic condensing mirror. Under the use of this method they have seen obstinate ulcers heal in some cases, infiltrations subside, painful lesions become painless, in fact a steady cleaning up and healing of tuberculosis laryngeal lesions. Occasionally at the beginning of treatment they have seen infiltrations break down into small ulcerations, which then proceeded to heal under the continued use of the light.

THE NEW YORK ACADEMY OF MEDICINE.

SECTION ON OTOLOGY.

April 11, 1919.

Cyst of the Mastoid Found at Operation. DR. FRANK H. KNIGHT.
(To be published in a subsequent issue of THE LARYNGOSCOPE.*)*

DISCUSSION.

DR. FORBES said he had taken the liberty of bringing two x-ray pictures in connection with this case. He had been wondering how Dr. Knight would differentiate between a cyst and a large cell, the x-ray here showing in all probability a large cell. It also showed the difference existing normally and anatomically between two mastoids. At first, he had thought it necessary to have two pictures taken in order to compare the fields and obtain data in regard to the possible involvement of the mastoid, but one could see how little aid would be obtained from the right and left mastoids of this patient. This patient had a middle ear affection, which cleared up in forty-eight hours, leaving only a little mastoid tenderness which disappeared in a few days; yet the picture showed, at the base, at the lower part of the sinus, a dark area, indicating either a cell or a cyst. Was there any way in which one could determine, prior to operation, which condition it was, or had these cysts reported found been found only at the time of operation?

DR. GUTTMAN asked if there was any history of trauma in the case, to which Dr. Knight replied in the negative. He then asked if the x-ray man had offered any explanation of the shadow before operation.

Dr. Knight replied that the radiologist had attempted none, but said he had never before seen a case like it—neither had he himself. It was simply noted as a peculiar condition; one could not tell whether it was a cyst or not.

DR. GUTTMAN said that we cannot rely on x-ray findings in acute purulent otitis media as in most of these cases one will find a shadow over the mastoid region because there is probably some affection of the mastoid in every acute case of purulent otitis media, which will cause a shadow over the mastoid bone; but this often clears up and should not be regarded as an indication for a mastoid operation.

DR. FRIESNER said that in discussing this case with Dr. Knight he had recalled that within five years he had read somewhere a report of a case of simple cyst of the mastoid. He also happened to be in the room when the case was operated upon and had then told Dr. Knight that although he had never before seen such a case he recognized the condition as he had read about it.

Referring to Dr. Forbes' inquiry, Dr. Friesner said there could be no argument as to the differentiation between a cyst and a cell; the transmission of the rays from a cyst differs very decidedly from that of a cell; one never sees a cell with the smoothness of outline that

that cavity presented. Mr. Sims knew there was some uLusual cavity or cavities in that location, though of course he did not know the nature of these cavities.

Dr. Forbes asked if the idea of an incomplete necrosis had suggested itself.

Dr. Friesner said that an examination of the picture would show that the boundaries were perfectly smooth, and necrosis would not give such an outline; furthermore, there was no evidence of bone disease; apparently the edge was perfectly normal, and then broke off sharply.

Dr. Forbes asked if the idea had suggested itself to any one whether there might not be an absorbtion due to necrosis in that area.

Dr. Knight, replying to Dr. Forbes' inquiry about the necrosis, said there that there must have been some disintegration of bone to have given such evidence, but there was apparently no diseased bone, and no real necrosis; even the surrounding edges of bone where the dura was exposed showed no evidence of necrosis; it was covered with a thin membrane; there was a disintegration and absorption of bone tissue but no disease of the bone itself. Of course the question of traumatism arises in these cases and probably most of them are due to traumatism. David Silver had reported a number of cases that had been studied, but none of them were in the mastoid. He divided the serous cysts into two kinds: those that have either no limiting membrane or else a very thin one, and those that have a very thick membaren. S . . . . . reported a case where the membrane was 5 or 6 mm. thick. He claimed that these milder cases were probably occasioned by haemorrhages due to traumatism; and in the other cases to traumatism preceding an osteitis fibrosis. There was no history of traumatism in the case reported tonight.

No examination of the fluid had been made; it was apparently an ordinary cystic fluid, excepting that that in the larger cavity was stained with blood. As soon as the bone tissue was decalcified, Dr. Dwyer would report on it.

Case II. Anomalous Condition Found Secondary to Mastoidectomy.
Dr. Frank H. Knight.

This patient was a young woman of twenty-three, who presented herself at the Manhattan Eye, Ear and Throat Hospital with a running ear and a very peculiar condition in the external auditory canal. She had had the usual children's diseases, and at seven years of age had an abscess of the ear, operation for which had been refused. At eleven, she had been operated upon at the Manhattan, but the record had been mislaid. Apparently a radical operation had been performed, but there had been a more or less intermittent discharge since. When admitted to the hospital the patient had some pain, dizziness, and this discharge.

On looking into the external auditory canal one can see what looks like a vein running from before backward, inward, and upward; one might think it was a continuation of the jugular bulb connecting with the sinus. The patient's husband was on the other side, and she wished to wait until his return before submitting to an exploratory operation. It did not seem probable, however, that it was a vein; it was more

likely connective tissue filled with muco-purulent material. By pressure some of this material had been squeezed out and the patient claimed to have felt better since.

DISCUSSION.

DR. FRIESNER said that it could not possibly be the bulb; it was too far forward; it was in the carotid position. He had seen such a condition before. The tube was very well closed off, the tympanic orifice had epidermatized, and there must have been some cicatricial tissue in the tube itself, and the infection which traveled up the tube could not break down the epidermis wall at the tympanic orifice, so that it was shut off at the other end as well. You have a collection of fluid very much like a mucocele; that is, you have a collection of fluid, originally muco-pus or pus, shut in at both ends; practically the cicatricial tissue at the pharyngeal end of the tube must have closed down behind it, and the epidermis layer at the tympanic orifice still held it in place, even though there was a minute opening in it.

DR. KNIGHT said he agreed with Dr. Friesner that this sac was probably filled with fluid. Dr. Duel saw the case and thought there might have been a very thorough curetting of the end of the Eustachian tube and air blown through the canal had formed this sac. It was evidently shut off in some way. There was probably only a small opening there, and by pressure the fluid was squeezed out. It had some of the appearance of a vein, but could hardly be that.

Case III. Case of Perisinus Abscess Without Involvement of the Middle Ear. DR. FRANK H. KNIGHT.

This patient could not be shown, as she was at Liberty, N. Y. She was a child of about fourteen, who had suffered from the usual children's diseases. Last December she had an attack of influenza, which laid her up in bed for two weeks. On March 3, the family noticed a swelling posteriorly on the mastoid, and she had some pain in the region of the ear. The family physician advised that a simple mastoid be performed and she was admitted to the Manhattan Eye and Throat Hospital and operated upon March 10 by the house surgeon, under my direction. The usual incision was made, and as the flap was retracted pus exuded under pressure and was pulsating. Underneath, covering the sinus, covering the cerebellum, and extending downward well toward the bulb were quantities of granulation tissue. The cells were filled with pus, but the aditus had only a little fluid. The tissue around the antrum was very hard and eburnated; the aditus was very small. The smallest probe did not seem to reach the middle ear. Another interesting point was that there was no apparent infection of the middle ear. The drum was practically normal.

The child went home on March 21, to Liberty, N. Y.

DR. ALFRED KAHN said that as he understood the case there was no involvement of the middle ear. It was probably not a primary infection, but doubtless at a previous time it had some connection with the middle ear, and having that in mind it would be interesting to know the character of the bone. Was the bone hard and eburnated or was it cellular? If there had been first a middle ear infection, then mastoid involvement, it is interesting to note the pathology of this type of in-

fection. The middle ear and mastoid resolved leaving a localized lesion over the sinus. It would also be interesting to know the character of germ that caused the infection—possibly a streptococcus. If it were a case of long standing, there would probably be a history of having had middle ear discharge for a long period of time. Were the malleus, incus and stapes intact? Were those parts noted?

DR. BLACKWELL expressed regret that he had not arrived in time to hear the report of the case, and inquired if the patient had had an attack of influenza prior to the devolopment of the abscess. Recently he had seen two cases of perisinus abscess and mastoiditis, in which the symptoms pointing to the ear appeared only a day or two before the operation was performed. Naturally, however, there must have been a long-standing mastoiditis of low grade intensity of which the patient was not aware, as in both instances the degeneration of the mastoid was very large. He had attributed this low grade type of infection to the fact that in each instance the patient had previously suffered from an influenza and pneumonia which was followed by general weakening with attendant loss of reaction.

Sub-periostial and even perisinus mastoid abscess associated with a dry middle ear is not uncommon. In these patients there is always a primary tympanic infection, the drum may or may not rupture, the inflammation extends backward into the mastoid, the narrow antrum connecting isthmus-like the tympanic cavity with the mastoid cells becomes readily blocked by granulation tissue which is soon converted into a thick, organized plug completely separating the middle ear from the mastoid. The tympanic cavity being separated from the main site of infection is thus permitted to undergo resolution and return to normal, while the inflammation in the mastoid may progress to either a solution of the internal or external table of the skull with a resulting epidural or sub-periostial abscess.

Answering Dr. Kahn, Dr. Knight said that the bone around the antrum was hard and eburnated, as though a chronic process had been there a long time. The outlines of the malleus were clearly seen. There was some sclerosis of the bone, so that it was impossible to see the incus.

It was very interesting to consider how this condition came about. There was an attack of influenza in December and the child was laid up for two weeks. It was a question whether at that time there was not an attack of middle ear infection. Owing to a possible large Eustachian tube the pus may have drained into the throat and so relieved the middle ear condition, and yet the infection may have extended through the aditus to the antrum and mastoid cells, becoming a chronic process, which caused the hard ebonated bone in and about the antrum, and eventually the infection of the cells and the resulting in the perisinous abscess. I believe that in all of these cases there must have been primarily a middle ear infection, even though it does not show.

Paper: Remarks Upon the Treatment of Gunshot Wounds. GERARD HUTCHISON COX.

(To be published in a subsequent issue of THE LARYNGOSCOPE.*)*

DISCUSSION.

DR. FRIESNER said it was one of the most interesting papers he had heard in a long while and he was very sorry that Dr. Neuhoff was not present to answer some of the questions he would like to ask.

One of the most interesting points was that in regard to tangential wounds. About three years ago he had been called in court as an expert after examining a man who had been struck by a large tile that fell through a large hole in the ceiling sixteen feet above where he stood; the corner grazed his mastoid as he was stooping and he fell unconscious. He was in the hospital for several days, and had considerable difficulty in walking when he got up—with a history of vertigo, dizziness. and vomiting—as though the blow had destroyed the labyrinth. Yet, surprising to say, he gave evidence of only middle ear involvement. Examining him neurologically, a decided weakness was noted in the right arm (the injury was to the right mastoid); he had a marked ataxia of the right arm, and persistent past-pointing outward at the right shoulder, elbow and wrist. In other words, from this tangential wound on the mastoid he gave evidence of serious although healed cerebellar lesion on that side. There must have been considerable shattering of the cerebellar tissue or a cerebellar haemorrhage, or something of the kind, to cause such a marked disturbance two years after his injury.

The method described of controlling the haemorrhage from the sinus was very ingenious. The use of muscle and fascia for this purpose originated, he believed, with Mr. Ballance of London.

As to ligaturing, Dr. Friesner said he had studied on the cadaver this method of ligating the lateral sinus through small openings in the dura and tying it with chromic gut, and felt very proud of it until Dr. Deuch told him that Mr. Ballance had successfully used it in a case of cerebellar abscess. Bourguet also has described this precedure. Since that time—within the last two years—Dr. Eagleton and Dr. Page had each devised a small instrument for the purpose of controlling bleeding from the lateral sinus.

Dr. Friesner then asked Dr. Cox where the lateral sinus had been tied—the sigmoid portion or the lateral portion behind the knee. The latter has two fixed points because of which it cannot very well be tied. If. Dr. Neuhof tied it at the lateral portion, it would be very interesting. The sigmoid portion does not lie between layers of tentorium, but the other lies where the tentorium is attached and its edges are triangular and fixed.

DR. COX replied that it was tied far back and it controlled the bleeding.

DR. FRIESNER replied that that was most interesting, and expressed the wish that the members of the Section could hear more about this brain surgery, particularly in connection with the mastoid, and most of all as applied to the lateral sinus.

DR. FORBES said that undoubtedly Dr. Neuhof and Dr. Cox could give much information, and present many new features in connection with their work. In the base hospital quite near the front, where he himself had been, many cases would have only a primary dressing and be rushed

along in a few hours, and some came to them almost from the operating room. In that way he had opportunity of watching many of these complicated cases; they showed the necessity of having a specialist, even in the evacuation hospitals. One of his friends, an otologist, had unfortunately been put to work in an evacuation hospital as an anaesthetist, and was able to observe without advising.

Second, the x-ray pictures. A report came back with a man showing a foreign body in the right antrum, and nothing else; this was fluroscopic. To confirm this, an x-ray picture was taken, and the foreign body was found in the right antrum, but another, more important, was found still further back in the mid brain. The point of entrance was in the left antrum, the second going through the floor and landing in the mid brain. Many of these patients come with multiple wounds; one might overlook a foreign body now and then. It might be impossible for a neurologist to go over all cases when 200 or 300 patients were coming in. There was not much opportunity then for consulting specialists; the men in many cases had to go ahead and do the best that was possible under the circumstances.

Dr. Kahn said that the point that impressed him most after hearing this paper was to determine how we could apply this experience the men brought from abroad in our every-day practical work. For instance, in regard to the dressing of the mastoid wound. We have these cases running along anywhere from two or three weeks to six or eight months. The treatment with the Carrel-Dakin method is a very marked advance over the customary method of dressing wounds. Sometime ago he had published a paper in the Medical Record where he described the dressing of the mastoid by the Carrel-Dakin method. At the time of closing the wound, a small opening was left above and below, where rubber drainage tubes were inserted; the upper tube was connected with a Davidson's syringe or preferably with a glass jar containing the solution; the patient was put to bed with the mastoid wound downward on a kind of Kelly pad, but smaller, and the solution was allowed to run through the wound and into a bucket on the floor. When the patient was sitting up, a bag could be used—a funnel-shaped bag, fitting under the ear and having a flap which could be pulled up over the mastoid dressing, the upper tube running out of the dressing. The wound could be irrigated from time to time by connecting the upper tube with the syringe. The mastoid wound is closed; it heals up practically like the radical operation, excepting that a small opening is left above and at the lower angle. This method does away with the necessity of constant packing; it keeps the parts clean, and prevents the wound from becoming infected. If it were put into general use, it would be better than packing these cases.

The method of controlling haemorrhage was very interesting. Some time back, in a case of severe bleeding from the sinus, Dr. Dench had advised taking a piece of the temporal muscle and putting it in place. Dr. Kahn said he had seen him do this twice.

It would also be interesting to know if, when the mastoid was pierced by a bullet, whether they had been able to demonstrate the presence of a

bullet in the brain tissue and whether the bullet was allowed to remain, and if any of these cases recovered when the bullet was actually in the brain tissue.

DR. BLACKWELL said that in common with the others present he had enjoyed so much hearing the paper of Dr. Cocks. He did not believe, however, that any striking analogy existed between the treatment of gunshot wounds of the mastoid and the wound of that region which follows a simple mastoid operation. He was surprised to hear one of the gentlemen present recommend in his discussion of Dr. Cock's paper as a routine measure the irrigation of the mastoid wound with Dakin's solution at frequent intervals subsequent to simple mastoidectomy and civil practice. He would ask the gentleman in how many cases he had practiced the procedure. Dr. Blackwell did not believe in the routine irrigation of mastoid wounds in civil practice; furthermore, he would be inclined to regard the presence of any marked infection as due to an incomplete operation rather than introduced subsequently during the process of dressing.

In reply to Dr. Frieser's question as to what Dr. Blackwell meant by infected mastoid wound, he wished to say that his reference was only in a clinical sense and not from a bacteriological standpoint.

DR. KAHN said that he had irrigated these wounds in three or four cases; they did not break down, and gave good union and healing. They looked almost like a radical operation.

DR. FRIESNER asked how Dr. Kahn controlled the time of the irrigations. Were cultures made from the wound?

Dr. Kahn replied that he used the treatment empirically, irrigating with a syringe every three or four hours for several weeks; he did not make any bacteriological tests, but merely irrigated the wounds periodically, and the results were very satisfactory.

DR. KAHN said that when a mastoid wound is packed, even if the surgeon is very careful not to let his hand come in contact with it, there is often a primary infection and that there is always a certain amount of secretion to be carried out of the wound, and in hospital practice, clinical work, these wounds almost invariably become infected; they break down, form granulation tissue, etc. If the wounds are allowed to close, and irrigated thoroughly, they would granulate up just like in a radical operation.

Dr. COX, replying to an inquiry about the strength of the solution used, said that in this country the Carrel-Dakin treatment is somewhat in disfavor because it is not used properly, and also because the solution employed is not freshly made. In France they make it fresh every day or every second day; they never use any old solution. The practice of some hospitals in this country of making up the solution once a week is ridiculous and is bringing the treatment into disrepute. If the solution is used at all, it should be used at full strength, and not diluted. To protect the skin, strips of gauze saturated with vaseline are plastered around the area treated. He had given up using it in the antrum and employs boric solution there, as the chlorine is too irritating when it runs into the nose and mouth.

The Carrel-Dakin solution was used on the dura and even the brain tissue if necessary. In one case it was employed after operation for cholesteatoma, sinus thrombosis, brain abscess, and hernia cerebri. In another case treated by Captain Neuhof, the patient had a very severe head wound of the occipital bone, a large piece of bone being shot away, producing a big hernia cerebri. Carrel-Dakin treatment was applied, and the man went out cured of the hernia and in good condition.

One of the audience asked if Dr. Cox had ever employed Usol, a combination of boric acid and calcium chloride, which had been used by the British; it was also less irritating to the skin and obviated the use of the vaseline-saturated gauze.

Dr. Cox replied no.

Dr. Kahn's technique of allowing the solution to run in through a catheter from a little hole in the upper part of the wound and escape from another opening below, was very ingenious, but the weak point in his technique was that the post-operative treatment does not take care of the closing of the mastoid antrum; also the solution should be used every two hours, and not every four or five hours.

The technique finally adopted was to put one tube into the mastoid antrum and put one or two more in other parts of the wound, surrounded by Dakin gauze, then smear the edges of the skin—the whole area under the bandage, with vaseline preparation, or use a vaseline-soaked gauze.

It was found that the mastoid wounds were not so apt to bleed if the Carrel-Dakin solution was not used during the first twenty-four hours. In gunshot wounds of other parts of the body, such as the extremities, the Dakin solution was used every hour for twenty-four hours, and then every two hours.

Captain Neuhof used tissue graft to control sinus bleeding in seven cases, and ligated the sinus in three traumatic cases, and in one sinus thrombosis of otitic origin.

The Carrel-Dakin treatment was used exclusively in the Presbyterian Hospital Unit for practically all suppurative wounds, with remarkably gratifying results.

May 9th, 1919.

Outlines of a New Instrument to Be Used in Skin Grafting in the Radical Mastoid Cavity. DR. ALFRED KAHN.

The object of the instrument is to overcome the difficulty in getting the skin off the slide and into the cavity where it is to be spread. The graft usually rolls up and is difficult to manage. The object is to obviate these difficulties and also to facilitate the placing of a secondary graft in a radical cavity after the posterior wound is closed. Instead of opening the posterior wound, with this instrument a graft can be inserted through the external auditory canal.

The technique of graft placing is to place the graft on the slide and then to work it off with a "teaser," the assistant pushing it along to where it is needed; after that the graft is elevated and a little suction places it firmly in the cavity.

This little instrument is a rod, four sides of which are grooved. The graft is placed upon the notched slide, and the next object is to get it on the rod and place it into the cavity, after which it is spread with the teaser, the skin on the rod meanwhile is held firmly in place. The little spicules at the top hold the graft firmly in place. It is held by the handle in the left hand, then the rod is brought up and released.

DISCUSSION.

DR. LESHURE asked if there was any possibility of tearing the graft, and Dr. Kahn replied in the negative. Of course it has to be handled very carefully, otherwise one might button-hole it.

A Case of Otitic Brain Abscess. DR. JOHN GUTTMAN.

DISCUSSION.

DR. DANZIGER asked which side was infected and said that Dr. Guttman stated that when the dura was exposed pus exuded. If that was due to a brain abscess, there must have been a fistula at the time of the second operation.

DR. LESHURE asked if Dr. Guttman found a stalk leading from the ear.

DR. GUTTMAN said that he did not find the opening in the dura. The opening was in the bone; the pus was simply lying on the dura, and therefore he considered the case an epidural abscess.

DR. BLACKWELL asked if the opening was in the tegmen tympani or the tegmen antri, or in both. Was the dehiscence in the roof large enough to include the roof of both regions?

DR. GUTTMANN replied that it was very small; that the fistula was in the region of the tegmen antri.

Perisinus and Epidural Mastoid Abscess Subsequent to Influenza. Two Cases. DR. H. B. BLACKWELL.

(To appear in a subsequent issue of THE LARYNGOSCOPE.*)*

DISCUSSION.

DR. HAYS said he did not think this report should be allowed to pass without some remarks. In the first place, Dr. Blackwell entitled his cases correctly by saying they were subsequent to influenza. That diminished the resistance of the patients. The same condition might have occurred after any severe illness, such as these patients had.

Remarking about the cases going on in a more or less quiescent way, Dr. Hays said that some five or six years ago he had reported some cases under the title of latent mastoiditis. The patients had little or no temperature and complained of nothing excepting deafness and the discharge from the ear. In all these cases when you do operate you find a complete destruction of the mastoid process. Dr. Hays said that recently it had occurred to him that these cases might be compared to cases of acute appendix that go on to the gangrenous stage; when all the pressure is relieved by the total destruction of bone, if the drainage is good the patients complain of very little pain or tenderness, and yet the condition goes on to epidural or perisinus abscess. Of course in the abdominal cavity the condition is not the same, for there is a possibility of rupture

into the peritoneum in a short time. The tissues are not so resistant as in the mastoid cavity. Every one comes up against these infections. The reason staphylococcus aureus is found so often in cultures is because it overgrows other bacteria. It was surprising that there were so few car cases in the fall epidemic of "Flu" over here and abroad. We are probably seeing more of the infection today, and indeed the fact that there have been so few would seem to indicate that the "flu" is not the ordinary influenza.

So far as the operative technique is concerned, Dr. Blackwell's technique is almost too perfect. Sometimes we do not let nature do enough. When we have an acute process and have cleaned out the antrum and mastoid, the middle ear and attic can very well take care of themselves. Of course the healing process will be better for the thorough cleaning out, but often this is done at the expense of the hearing later on. Dr. Hays said that in doing a mastoid operation he is satisfied to thoroughly clean out the mastoid and antrum and let the healing take care of itself, for the discharge will drain out through the antrum either through the large incision in the drum or through the mastoid cavity.

Dr. Kopetsky said he was inclined to agree with Dr. Hays' remarks in regard to the classification of these cases rather than to assign any direct sequence between the infection that these patients developed two or three weeks after the influenza. They simply showed the usual typical history of cases which developed after a debilitating disease.

In regard to the capsulatus infection, absence of pain was a common observation; that is why the capsulatus infection is so dangerous. It is well known that in epidural abscess—if it does not absolutely cause pressure—the symptoms very often escape attention; the majority of them are discovered on the operating table. The debility which these patients suffered in the general infection should have had something to do in placing the indications for operative procedure. A patient who has had a general debilitating disease prior to coming under observation should be operated upon sooner than otherwise; in these one should not wait for a stormy picture as an operative indication.

Dr. Kopetsky said that although Dr. Blackwell had had wonderful success for a number of years in treating these cases, a recent reading of the doctor's paper presented before the Tri-logical Society in 1917 had confirmed his own opinion held then that the mucous membrane of the aditus, though it may be considerably swollen and thickened, will, if let alone, return to its normal condition, leaving an aditus more nearly approaching the normal. Unless the aditus is distinctly involved, by leaving the membrane alone one has, post-operatively, an aditus which is normal, with ossicles functionating in an air cavity. Dr. Kopetsky said, further, that he had never been able to understand how when the granulations start to grow Dr. Blackwell prevents them from impinging on the ossicles; nor could he understand how after such treatment the ear could function as well as with a normal cavity filled with air; and while all recognize that in Dr. Blackwell's hands this procedure has given excellent results, until better reasons submitted for its employment, based more particularly on the pathological conditions in the ear and the post-operative results, it should not be generally adopted nor the question al-

lowed to pass without registering these objections, which have never yet been answered.

DR. FRIESNER said that the discussion of the technique was overshadowing the report of the cases. Each year we see more of these cases of latent mastoiditis, and this year has been particularly fraught with them. Why this is we do not know. Dr. Friesner said that he did not consider the cases of acute otitis media with a profuse discharge a latent mastoiditis. In the months of January and February he saw seven cases of perisinus abscess in which the middle ear had never discharged. For one man with a limited service to see so many such cases was surely unusual. Almost all of these cases began with influenza, one as early as September, continued for two months with pain but no discharge from the ear. It would seem that influenza itself cannot account for this peculiarity. So far as the invading organism was found, in most of the cases it was streptococcus haemolyticus. That we have seen in former years. One fact would seem to stand out very clearly. Most of them have been seen and operated on late in the season, after the severe weather ceased. It may be that this past winter, having been particularly mild, might have influenced these cases either by lowering the resistance of the individual or by some influence on the invading organism. One feature that was peculiar in the cases just referred to was that in operating there was found a very firm fibrous plug occluding the aditus in all of them. The speaker said he did not recall ever having before seen so frequently such a peculiar anatomical structure in the mastoid.

DR. BLACKWELL said he could not understand how anyone could say that there was no connection between the attacks of influenza and the aural infection. In one case the ear symptoms first appeared while the patient was still suffering from influenza pneumonia and in the other two immediately after the acute manifestations of that disease had subsided. He attributed the absence of initial pain so noticeable in two patients to the marked loss of general vitality and resistance so characteristic of influenza and not to the capsulatus infection which was only present in one case. In his own experience during the initial stage of an acute otitis media and mastoiditis there is quite as much pain in capsulatus infection as in others.

DR. HAYS had referred to a certain class of subacute mastoiditis which he terms latent mastoiditis and which is characterized by very little pain or other symptoms. It is a matter of common observation that patients with mastoiditis if unoperated upon and allowed to pass into a state of subacute mastoid inflammation all become latent, in that the pain practically ceases and there usually is little if any constitutional reaction. It was difficult for him to see the surgical value of an analogy between this so-called latent mastoiditis and a walled off appendicular abscess. Middle ear and mastoid abscesses differ from all other abscesses in the body in that there is constantly present the external auditory canal, a bony channel, whose lumen is fixed in size and along which pus can escape with comparative freedom. Referring to the criticism of the functional results obtained after cleaning out the attic, Dr. Blackwell said that they were chiefly theoretical. He said that he had always tested

the hearing of these patients after recovery, a great many had been presented at previous Section meetings. It was his conviction that in none was there any impairment of function as the result of curetting the attic free of inflammatory products.

DR. FRIESNER had spoken of finding a fibrinous plug blocking the antrum region in cases of subacute mastoiditis associated with dry canal. Dr. Blackwell said that this condition was not uncommon, as granulations readily form and inflammatory exudate easily accumulates in this narrow isthmus-like region. The combined mass may become organized into a thick fibrinous plug, partially or completely sealing off the mastoid from the middle ear. Under these circumstances the tympanum may undergo more or less complete resolution and the canal become dry. The mastoid inflammation in the meantime may resolvse or result in the formation of a peri-sinus or subperiostial abscess.

The Cure of Established Mastoiditis at the Critical Stage by Tonsillo-Adenectomy. Presentation of Patients. DR. OTTO GLOGAU.

DISCUSSION.

DR. DANZIGER said that Dr. Glogau had simply stated that the procedure of removal of tonsils and adenoids was curative "established mastoiditis." Sometimes that means very little and sometimes very much. Mastoiditis is not a uniform pathological condition; sometimes it means inflammation of the mastoid cells, without any affection of a bone; another case might have destruction of the bone, accumulation of pus, etc. Dr. Glogau had quoted from a paper read by the speaker some 15 years ago; and his points hold good today. If we have an acute otitis and mastoid tenderness, that does not mean that the mastoid process must be opened, for there is still a chance that it may become normal again; but if the pressure in the mastoid has been such that trophic changes and destruction of bone have occurred, or if there is a septic temperature, then certainly it is not a case to be treated by the removal of the tonsils and adenoids. If we have to deal with an O. or a p. complicating air omits liberal infection. We must consider not only the condition of the ear, but the whole condition of the patient. It is not good surgery to scrape around an infected area when we do not know what kind of bacteria are there. Naturally all know that in subacute cases with adenoids it is advisable to remove the adenoids, but one should always be very careful not to meddle with the throat in cases of acute inflammation. Every one knows of cases of acute sepsis caused by such treatment.

DR. HAYS said that he had the greatest respect for Dr. Glogau's ability, and had no intention of making any reflections on him personally, but if he were to take up the paper step by step he would disagree with almost every step mentioned. In his opinion such a paper was extremely pernicious and would do a great deal of harm if published and read by those who are not aware of the seriousness of mastoids as do the specialists. Every one knows that tonsils and adenoids may be the cause of extreme infections and should be removed in many instances, and yet doubtless all have seen these cases where the tonsils and adenoids had been removed. We are dealing with an acute condition in which many

times the conservative thing to do is the mastoid operation. In the children where we see the smallest number of symptoms we must be guided by the objective signs, and often the mastoid operation is the conservative procedure. A most important point in the whole thing is that the cases cited by Dr. Glogau had been observed for only a few months, and for a supposed mastoiditis and a cerebellar abscess. The man has not made up his mind definitely that the child had a cerebellar abscess, but thought an exploratory operation would be necessary. Several weeks before the child had measles and some sort of sore throat, probably diphtheria, though that had not been suspected at the time. The child was a six year-old boy, and when seen looked quite well, had no headache, no vomiting, and his temperature and pulse were normal. He had, however, a complete paralysis of the hypoglossal nerves and a marked ataxia in both legs, and had also nystagmus. For three or four weeks he had had a discharge from the middle ear. The mastoid was not tender nor was the discharge profuse. Dr. Friesner said he felt that if the child had any intracranial complications such as would cause these bulbar symptoms, he would certainly have had headache and some disturbance of the vital centers, some respiratory disturbance, disturbance of the pulse ratio, etc. He therefore kept the child under observation for several days, and then asked the surgeon to remove the adenoids and tonsils, not because of a mastoid condition but because he thought that the discharge from the ear was being kept up by the tonsils and adenoids, which, however, were not very large. Some little difficulty was experienced in inducing him to remove them for fear of some bulbar complication which might cause cessation of respiration, but he finally did so. The middle ear cleared up very promptly. One might say that this child had a mastoid and a cerebellar abscess that were cured by the tonsillectomy, but he certainly did not have a cerebellar abscess.

Dr. Friesner said that in his mind mastoiditis meant operative mastoiditis, and he did not believe that operative mastoiditis could be cured by tonsillectomy or adenectomy, any more than a cerebellar abscess could be cured by such a procedure.

Dr. Kopetsky said that the discussion of Dr. Glogau's paper really resolved itself into a differentiation of terms. What do you mean by mastoiditis? Again, you cannot get away from the pathological premises. They are fixed; most of them are proved. Every time the middle ear is involved, the cells of the mastoid process are also involved. That has been proved not only by post mortems, but by the x-ray. These are not cases which most of us would submit to a mastoidectomy; yet they are cases in which the clinical symptoms might disappear under a tonsillectomy, but he who would do a tonsillectomy, hoping to cure a case which presented a symptom of thrombus of the mastoid would be taking tremendous chances. He may go in later and remove the thrombus, but he is taking chances which he is not justified in doing. The essayist had laid stress on the danger from the Eustachian tube. In how many of his cases did he prove . . . . . that the drainage is better after operation upon the tonsils and adenoids? In children, the tube is usually patent; it is short, straight, not yet tortuous, not yet collapsed. The adenoid tissue will not block the orifice, and if there was tremendous drainage from

the pharyngeal orifice of the tube, he ought to be able to demonstrate it. Neither had he observed the cases long enough to study the question of recurrence: He had spoken of the protective action of Nature. That is well and good; but in a given case what proof has he that that protective barrier will be thrown out? The analogy presented between the removal of the turbinated bone at the base of an abscess in the ethmoid region to cause drainage and the removal of the tonsil or adenoid and the distal end of a tube connecting with an abscess laterally, was not well chosen; then the conclusions were not correct. One could, as Dr. Hays had said, take the paper paragraph by paragraph and spend the entire evening discussing it, but not much could be accomplished by it. All had really been said when the paper was criticised as not being one proper to send out before the general profession.

Dr. Glogau's action in bringing it before the members of the Section for discussion and criticism was praiseworthy and he should be given credit for his observations. He might well keep these cases under observation for another season and then report upon them and meet the objections that have been raised, and determine whether or not the light has been carried further for all. It was doubtful whether the most conservative would at present accept the postulates presented in this paper. The doctor should make a clearer definition of what he considers the operative type of mastoiditis. A number of other things might be said, but the consensus of opinion in this discussion is sufficient to show that most of those present believe that the doctor is on the wrong track.

DR. KAHN inquired concerning the range of age of Dr. Glogau's patients. In his experience, he preferred classifying cases of O. M. P. A. in children in two classes—(a) a discharging ear with swelling back of ear (subperiostial abscess), (b) a discharging ear with no swelling back of ear. The latter class usually cleared up if left entirely alone. The former class were mastoid operative, while the latter class is best handled by irrigation and observation. Dr. Kahn did not think the removal of tonsils and adenoids benefited these cases so far as operative procedure was concerned; he was rather inclined to think that the reaction and resulting congestion which takes place after the adenoid operation would have a tendency to cut off any possible drainage from the Eustachian tube. Certainly in a case of diphtheria Dr. Glogau would not advocate the removal of the tonsils and adenoids, nor at the height of a scarlet fever infection; though he might in a mastoid infection, where there was a periosteal abscess. Of course he might argue that this was a streptococcus infection.

DR. KERNAN said he would like to speak a word against the analogy Dr. Glogau drew between mastoiditis and sinusitis. It had been his own experience that these cases should be undertaken with the greatest caution; in the cases where he had done something insufficient, taking off the middle turbinate, etc., the inflammatory reaction had usually made the cases worse. He had seen cases of frontal sinuses with considerable discharge of pus, and after the removal of the turbinate the tissues swelled up and shut off the drainage. Would not the same obstruction take place about the Euctachian tube if adenectomy were done in a critical mastoiditis? All have seen cases in infants where the

crying of the child produces a discharge of pus through the incision in the drum. That must have meant that the Eustachian tube was open and that there was drainage through the ear in spite of the fact that the inflammation of the middle ear was going on to a mastoid condition. The doctor should not take refuge in a definition of terms or to say there is no telling whether these cases will eventually develop a sinus thrombosis, brain abscess or meningitis. Dr. Hays then cited a case seen some time ago with Dr. Dixon; the patient had practically no tenderness and no sagging, and he could not make up his mind whether to operate or not. The x-ray picture showed a cloudy mastoid. She finally went to another man, who decided to temporize, and four weeks later she was discharged, cured, but no one knows what may yet happen in that case in the future or in Dr. Glogau's cases. If they are real cases of mastoiditis, very possibly they are temporarily cured; but most probably if there is a mastoid condition, it is encapsulated, and the patient will probably sooner or later come in with a critical acute condition. No one wants to operate upon a child unless it is necessary, but it would seem that Dr. Glogau has started off with the wrong premises.

Dr. Hays repeated that he would not speak as he did were he not convinced that the publication of the paper would do a great deal of harm, and if he had been consulted about it he would have advised the doctor not to read it at all.

Dr. Danziger said that he agreed with Dr. Hays that if Dr. Glogou's paper were published in a journal of general medicine it would do a great deal of harm, and he should certainly modify it in some way before publishing it.

Dr. Friesner said that he could not add much to what had been said and yet he had had an experience last summer that might throw some light on the subject. The patient was a child in the service of another otologist, in a New York institution. It had been admitted for operation that we agree except on the definition of terms. He had defined his terms pretty strongly; he said "established mastoiditis" at a critical stage, and painted a gloomy picture of a very sick child.

Dr. Hays said that the paper was good, with a few corrections. If the doctor would change the title of the paper to read "The Removal of Tonsils and Adenoids for Acute Suppuration from the Ear," every one would agree with much that had been said.

Dr. Glogau thanked the members for the kind treatment they had accorded him as compared to that given . . . . . when he first spoke of the conservative radical operation, though shortly afterward it was accepted with the greatest enthusiasm. He had presented the paper in order to bring out criticism, and had no intention of publishing it in a general journal; it was intended to enhance our knowledge. He had stated clearly that he had treated only small children from three to four months of age, and they might have gotten well. He was not speaking out of the blue sky, but had spent weeks and weeks studying up the subject. It was only an attempt to make a definite distinction. In former years we would take out any turbinate, any tonsil. We would not think of any modification, but were very radical, and he believed it would be so in these cases. . . . . that 70 per cent have cleared up

without operations. It is just for this reason, that we should establish the indication for operation, that the subject was brought up.

Dr. Glogau said he agreed with many of the gentlemen who had spoken that it was mainly a question of definition; Dr. Kernan said it was a question of indications. Dr. Glogau said he had made this distinction, and felt it was safe to wait . . . . . and if any suspicious symptoms arise, give the child the benefit of the doubt; but believed that something had been done by previously removing this infected

Dr. Glogau said he certainly would not operate on a case with scarlet fever or diphtheria, not only because there are serious . . . . . Klebs-Loeffler infection.

This paper was only a preliminary study, the cases were observed for only a short period of time, and he would make an effort to report on them in the fall. Dr. Glogau said he believed the Section was for the purpose of bringing up these conditions and taking up these subjects that may eventually lead to something new.

ILLUSTRATION OF HIS OWN CHILD.

In the first case . . . . . it had been decided that the mastoid should be operated upon right away, but knowing the history of the child . . . . . That child is now well, and is without any recurrence, three months later. It is like the removal of carcinomatous growths, which are reported cured. Perhaps the case will go on for three or four more years, and will then have a recurrence. This child may have a recurrence. The point made was that if these children are taken in hand and submitted to a tentative operation and kept under observation, if another operation is required later it can be done immediately. Dr. Glogau said he did not think the paper was a discredit to the Section, but was food for further thought. Whenever he sees such cases now, he removes the tonsils and adenoids right away, and then watches the child. In 10 cases, the percentage was 100 per cent. good.

Dr. Glogau said he did not claim that every one could be cured by a tonsil and adenoid operation, but it was a simple operation that would have to be done later anyhow, and it might accomplish a great deal of good. If these children can be saved from a severe operation by a simple method, they are entitled to have it tried.

Dr. Glogau said that he meant that these are not yet operative mastoid cases. He would look over the paper before sending it out for publication. The criticism would enable him to define some points differently.